

MOTOR AGE

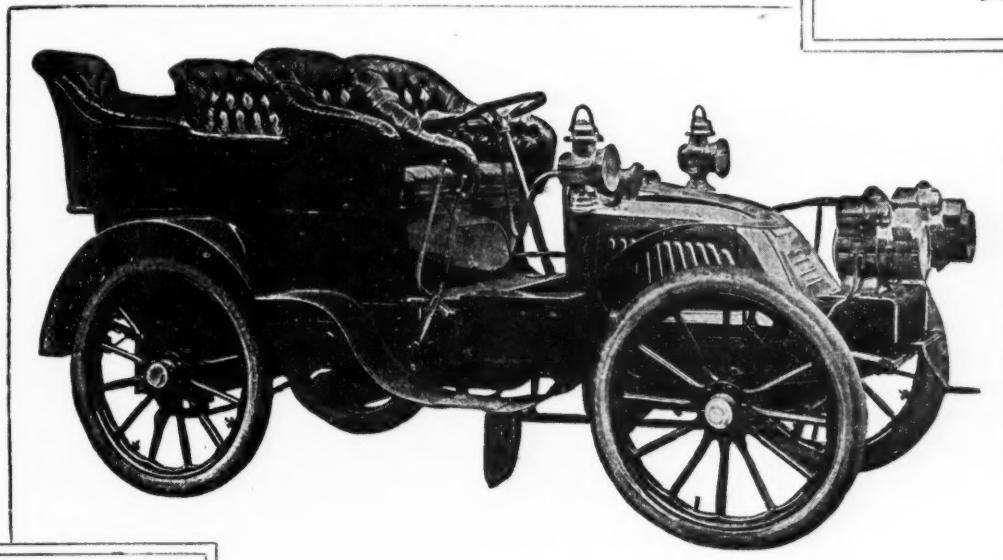
Vol. 3 No. 25

JUNE 18, 1903

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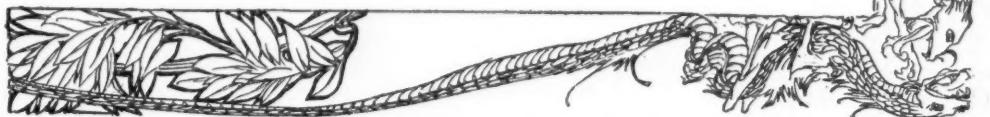
The Synonyms
for Perfection
in Automobile
Construction
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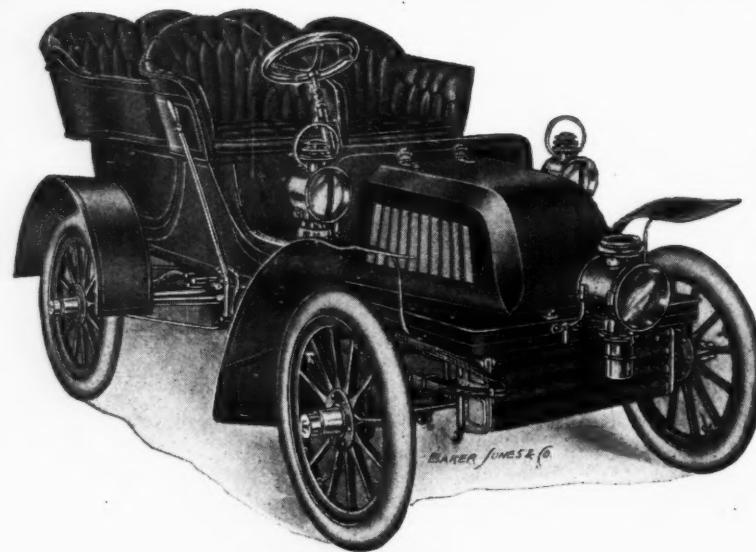


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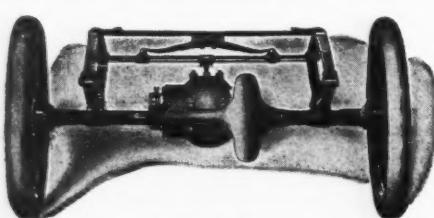
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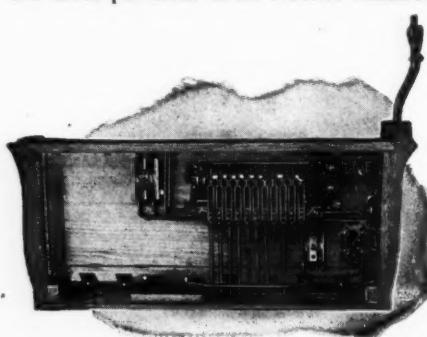
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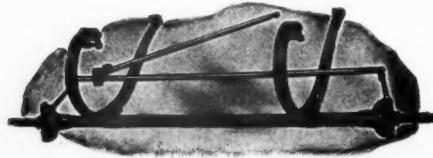
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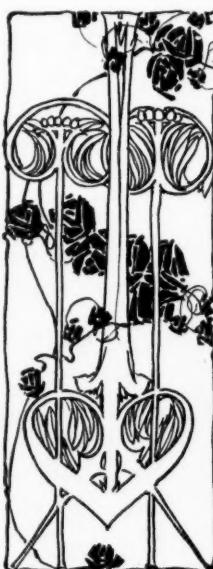
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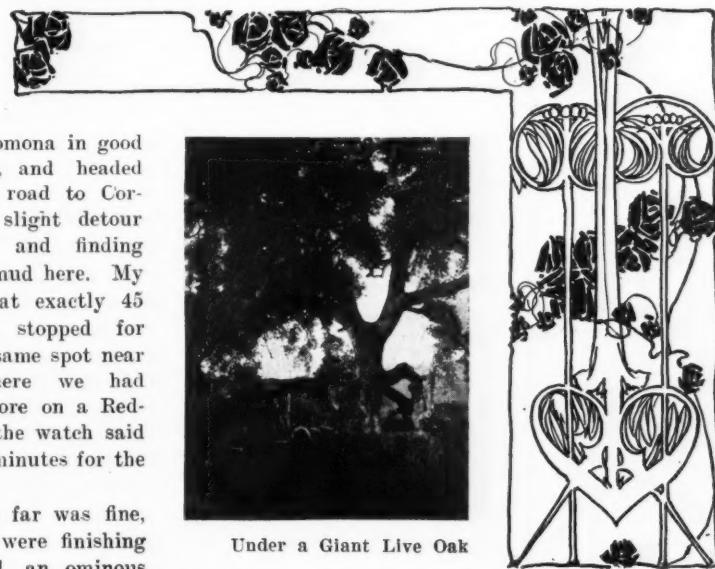
JUNE 18, 1903.

\$2.00 Per Year

A TRIP OF ALTERNATING PLEASURES AND DIFFICULTIES



Delightful Coasting



Under a Giant Live Oak

Editor MOTOR AGE—A heavy downpour of rain prevented the Pasadena Automobile Club sending eight machines on a run to Coronado Beach, the start of which had been planned for April 21, and the only members who were willing or able to start were C. B. Scoville, driving his 22-horsepower Panhard, and the writer, with a 10-horsepower Autocar, with canopy top. Accompanying the former were his chauffeur and Fred E. Wilcox, while with me rode Carlos Daughaday, of St. Louis, and John E. Jenkins, of Chicago.

We were well provided for the long journey, my machine being considerably overloaded, as I carried three suit cases, three extra outer tire casings, five extra inner tubes, five extra gallons of gasoline, a gallon of oil, a heavy jack, tarpaulin, two cameras, full sidebaskets and 150 feet of rope. Counting my top and passengers, my car carried the equivalent of six people.

SPADES COME HANDY

As our route lay through Pomona, we took the lower road across the bridge over the San Gabriel river, which for some weeks past had been too high for vehicles to ford between Duarte and Azusa, and bowled along merrily through Alhambra, past the San Gabriel mission and on to El Monte and Puente, finding the road unaffected by the recent rain. Beyond Puente, however, several stretches of adobe mud were encountered, and the heavy French car slipped into one deep mud hole and had to be shoveled out, Mr. Scoville having thoughtfully brought a spade along for just such an emergency.

We reached Pomona in good season, however, and headed for the foothill road to Corona, making a slight detour through Chino, and finding more dust than mud here. My odometer stood at exactly 45 miles when we stopped for luncheon in the same spot near El Rincon where we had camped once before on a Redlands run, and the watch said 3 hours and 15 minutes for the distance.

Everything so far was fine, but just as we were finishing our picnic meal, an ominous hissing sound startled us and we discovered Mr. Scoville's left front tire slowly flattening. Why this should have deflated after standing nearly an hour was inexplicable, but we all pitched in and helped put in another inner tube.

While doing so a cowboy rode by on horseback, and my brother-in-law, who had lived for some time on a ranch in New Mexico, remarked, "Let us see if that horse is a broncho." With that he emitted a series of blood-curdling Comanche war whoops and before the rider could turn his head, the horse stopped short and commenced to buck for all he was worth, while Daughaday continued his wild yells and the rest of us exploded with laughter. The cowboy bravely stuck on, however, and when his broncho subsided, he looked at us with a sickly grin and rode along. Daughaday told us that any horse with a trace of broncho

blood in him would invariably buck at that yell, and having heard it, I believed him.

The tire being inflated, we started on the long up-grade to Corona, along a gradual climb towards the Temescal Canyon road. Upon reaching the top of the 8-mile grade, a glorious view was obtained of the San Bernardino mountains to the north and east, and the rocky walls of the Temescal Canyon to the south and west, and we began our descent along a splendid highway, over which the Frenchman, rushing along at express train speed, soon left my smaller car far behind.

REPEATED TIRE TROUBLES

The race is not always to the swift, however, for suddenly, with a cannon-like report, Mr. Scoville's left rear tire exploded and brought him to a quick stop, and when I came along, repairs had begun a second time. This caused another 45-minute delay and left Mr. Scoville in bad shape, as he had brought only one extra inner tube for each pair of wheels and he had now used both and only the punctured tubes were in reserve, the last one having in it a slit about 18 inches long.

Within 4 miles more the rear tire gave out again and it began to look doubtful if we were to reach our intended sleeping place, Elsinore, before nightfall. Chauffeur Jim patched up the flattened tube and another start was made, only to end in disaster when, 8 miles from Elsinore, both the front and the rear tires gave out simultaneously. We were "up against it," seemingly, but I remembered having seen a sign of the Glen Ivy Hot Springs hotel about 3 miles back, and we



MOTOR AGE

Through Adobe Mud



The Panhard in Trouble



On San Luis Rey River Bridge



Picnic Lunch near El Rincon



Hotel Naples, Fallbrook

at once decided to spend the night there. A man in a buggy driving by was impressed into service and Mr. Wilcox went back with him in advance to arrange for our accommodation, while Mr. Scoville ran his machine into the bushes, covered it with his tarpaulin, and Chauffeur Jim went to a ranch house near by for the night. Then with my search lights blazing, I turned my car around and in the gathering darkness of the Canyon, we retraced our steps until, after a side climb of 200 feet in about half a mile, we reached Glen Ivy, one of the most romantic spots in southern California, and heard Mr. Wilcox's cheery voice announcing that a hot supper awaited us.

FRENCH CAR TURNS HOMeward

The charm of this fascinating place, tucked high above the Canyon road against the mountain, was apparent the next morning when, on our way to the hot sulphur pool to take a refreshing plunge, we feasted our eyes on the grand view beyond us, old Baldy looming up stern and white capped, over all. And before departing we strolled up along the tumbling trout stream which 3 years ago had been stocked with 10,000 trout and was just about to be opened to fishermen for the first time. Regrettably, and vowing to come again for some good sport in the near future, we oiled up my machine and returned to Lake Lee, where Mr. Scoville's car had been left.

Jim had spent half the night patching the split tubes and replacing the tires, but although everything seemed favorable, Mr. Scoville decided to tempt fate no longer, but to return to Pasadena at once. Sorry as we were to lose good company, his judgment proved right, for his treacherous tires failed him again after 5 miles of running and from there to Pasadena he had a constant struggle, not reaching home until the following evening, his wheels bound with rope. As Mr. Scoville had never experienced much tire trouble before, it seemed as if the accumulation of what had been due him for a couple of years had been heaped upon him in 48 hours.

We parted at Lake Lee and Messrs. Jenkins, Daughaday and I continued on to the South. We had escaped troubles of our own, so far, and were not anticipating any, when

suddenly a California road runner, otherwise known as a chapparal cock, ran out in front of us on the road for several rods. Now the general impression is that when a road runner crosses the road, no harm will come, but when he runs in front of a vehicle, something is bound to happen. Three times before on other trips this had brought me bad luck in the shape of a punctured tire, and seeing the bird of ill omen, my brother-in-law exclaimed "Look out for a pucture!" Sure enough, within 15 minutes, our left rear tire went flat. We vowed that the road runner is certainly a bad bird. Having reduced the art of replacing inner tubes to a science, we changed this one and were under way again in 25 minutes, soon reaching the boulevard along the shore of pretty Lake Elsinore, where for 3 miles, we had a fine spin, scaring up scores of wild ducks with every blast of our horn. At the Lake View hotel we enjoyed a toothsome luncheon and telephoned to Pasadena the news up to date. From Elsinore to Temecula it is 18 miles and the road is excellent, so that we made the run easily in 1 hour and 20 minutes.

JUMPING A DITCH

At only one spot did we have a scare, and that was in going down a hill at the foot of which the recent rain had made a cut, not noticeable at any distance. I speeded the car to rush the up-grade beyond and did not see the ditch—which was about a foot deep and 2 feet wide—until we were almost there. It was too late to slow down, so with a "Look out!" I turned full power on and plunged into and out of the bad spot with a mighty lurch. Fortunately, the edges were soft, or else damage would have been done. As it was, we escaped with only a broken spring clamp, which was discovered later and easily replaced by a village blacksmith.

There are two routes from Temecula to Escondido, one straight over the high mountains by the Pala Indian reservation, and the other, a longer way to the southwest, by Rainbow, Fallbrook and San Luis Rey. We chose the latter route, first because it was necessary to cross the bridge over the then unfordable San Luis Rey river at the town of its name, and also of a good hotel at Fallbrook.

After leaving Temecula, our work began. We turned abruptly towards the mountains and began the rough steep ascent of Rainbow canyon. Time after time I was obliged to stop and inspect the road, where the rains had washed long deep furrows in it, and figure out which of the ruts to straddle and which could be safely entered with my low hung car. In one spot, half the road was completely washed away to a depth of over 2 feet, and we had to build it up sufficiently to allow our wheels on that side to pass. We then wished heartily that we had borrowed Mr. Scoville's spade, which would have saved us much valuable time. Later, at Fallbrook, we purchased a long handled one, and strapped it on to the canopy top rods. The boys had to be constantly ready to spring out when we struck some especially steep place, to block the rear wheels with stones; for occasionally, on grade between 25 per cent and 30 per cent, when the engine would die down, I would stop, let the engine speed, and throwing in the clutch, work my way up over the stones and through the ruts, 40 or 50 feet at a time.

Not only were the long ascents difficult on account of the roughness of the road, but the short hills, down and up, were especially nagging because the rain had washed out hollows and washed in sand at the foot of every incline, and I had to use caution in descending and had no inertia left to help plough through the sand or make the corresponding rise. It was hard work for my car, overloaded as it was, but by using care and constantly persevering, we surmounted every difficulty and reached Fallbrook safely in time for a late supper and a comfortable bed at the Hotel Naples, having been nearly 4 hours making 15 miles.

LITTLE TROUBLE WITH HORSES

Our start Thursday morning was auspicious, and while we encountered several stiff grades and steep hills the first few miles out of Fallbrook, we finally reached the long descent to the San Luis Rey river and found the picturesque river road excellent, only two or three stretches of deep sand causing any bother. On the bridge we encountered our first team of wild horses and also a single one follow-



Split Rock, Rainbow Canyon



San Luis Rey Mission



A "Rocky" Lunch



Magnolia Avenue, Riverside

ing. As usual, we stopped and led them by, after much persuasion on our part and quivering and snorting on the part of the bronchos. We had comparatively little trouble on our entire trip with green horses and only once was I frightened when, on a narrow road, we met a buggy with eight children in it, four on the seat, two in the bottom and two on behind. Although I carry insurance protecting me in case of accidents to other people, I was panicky at the thought of what might occur if this horse should bolt, and I backed the machine up the road a quarter of a mile and then turned out into a field. The old horse jogged by sleepily without even looking at us.

INTO NATURE'S FLOWER LAND

The San Luis Rey mission, where we stopped to secure photos, is the best preserved of any in Southern California, and we were glad to visit and inspect it. The road from here to Escondido by way of Vista, Buena, San Marcos and Richland was alternately good, bad, indifferent, hilly, rocky, rough and sandy, with one deep mudhole in which we narrowly escaped being mired, and we were glad when we reached the stage highway with Escondido in sight. Here we stopped just long enough to take on gasoline and a few oranges and followed the telephone poles on our final 35-mile run to San Diego and Coronado Beach.



Inspecting Road near Rainbow

We spent a couple of hours inspecting our machine, tightening bolts and oiling up, and on the morning of the twenty-sixth started on our return trip, making the 74 mile run to Fallbrook leisurely and pleasantly in 9 hours, about 2 hours of that being used in stopping for lunch and to take photographs and half an hour in repairing a second puncture.

The next morning, in climbing our first hill out of Fallbrook, the engine began to pound and the power to give out, and it was with great difficulty that we reached the top. Alighting to see what was the matter, I discovered the water boiling and knew at once that my water circulation had stopped and the engine was hot. Then I saw that the spring holding the pump friction wheel against the clutch wheel had broken. It was an easy matter to connect on another and start again.

AVOIDING BAD SPOTS

We took a new route to Temecula, avoiding many of the steep hills, and some bad pieces of road, and passed through a beautiful oak grove for 3 or 4 miles, to Red Mountain Ranch, and thence to Rainbow. In Rainbow canyon we stopped at Split Rock to take photographs, amidst scenery wild and rugged. Our descent to Temecula was accomplished easily, as we found our road repairs still there and were familiar with the ruts. We breathed

and Mrs. Drake and Mrs. Jenkins telephoned they would come over the following day and join us. So, Mr. Daughaday went home by train and I took the opportunity, while waiting for the ladies, of having the machine thoroughly cleaned and overhauled, always a wise precaution after a long hard run.

HAPPY IN HAVING DONE IT

Shipping much of our baggage by express to make room for the women, we left Riverside at noon on April 30, by Magnolia avenue, that celebrated double driveway, and without incident, save a pleasant picnic lunch and our third punctured tire, made the distance, 65 miles, in 4 hours and 30 minutes' running time. My odometer registered 402 miles for our round trip, and I was not only proud that mine was the only touring car in Pasadena to have gone to Coronado, but to feel that it had faithfully lived up to its reputation and had brought me back.—TRACY C. DRAKE.

PLACE FOR SAFE RACING

The exceptional advantages possessed by the Ormond-Daytona Florida beach as an automobile race course, its perfect safety from accidents likely to occur when races are held over roads like those used in the Paris-Madrid race, has brought the attention of racing men to this course, so that many of the fast drivers



MOTOR AGE

In a Japanese Garden



A Stiff Mountain Grade

The road led us into a veritable nature's flower garden the first half of the distance, millions of wild flowers of every hue and variety stretching away on either side of us over plain and up mountain slope and the air being heavy with the perfume. The one bad place was the Poway Pass, a 4-mile grade varying from 8 to 18 per cent, but our sturdy little machine climbed steadily onward over the great hills and on the summit we pulled the plug and coasted down the other side.

VISITING QUAINT JAPAN

Our last 10 miles were over a high table land where the road was smooth and unfrequented, and we sped along rapidly in the invigorating air. One more long coast down to Old Town, a tussle with a quarter-mile of deep sand and we entered San Diego just in time to catch the 6 o'clock ferry for the beach, landing us at Hotel del Coronado proudly and safely with 195 miles to our credit.

The next 2 days were spent pleasantly. The Pacific squadron was in port and on the flagship "New York" I found an old friend, with whom we spent several hours. We took the machine to the Japanese garden and by dint of giving Kikusan, the geisha, a fast ride, were allowed to take photographs of a touring car in Japan.

more freely when Temecula was passed and we were speeding along the highway towards Elsinore, for our main difficulties lay behind us.

As Lake Elsinore became visible, the engine began snorting in a sort of surprised manner and then, with a few despairing gasps, stopped completely. Cranking it again, I discovered one of the cylinders was not working, and surmised valve trouble. It was but a few minutes' job to take out the inlet valve and insert a new catch to hold the button in place over the spring, the old catch having broken square in two. In my 5000 miles of running, this had only occurred twice. The valves themselves give me no trouble at all.

THE LAST LAP.

After lunching again at the Lake View hotel, we set off on the direct road to Riverside, passing for 25 miles through the midst of a broad, flat plain, covered with countless wild flowers, but with few signs of habitation. The road was good, with a slight up grade, so that about 5 miles from Riverside, we found ourselves high above that beautiful city with its magnificent orange groves and all we had to do was to stop the engine and coast down almost into the main street. Here we put up at the charming and quaint Glenwood tavern, one of the unique sights of southern California,

have informed the Florida East Coast Automobile Association that they will be competitors in the 1904 winter meet. It is claimed that entries have already been received from L. P. Mooers, Henry Ford, Barney Oldfield, George C. Cannon, F. E. Stanley, John Wilkinson, Earl Kiser, Tom Cooper, George Holley, J. C. Brandes, C. S. Wrigley and Carl Fisher.

Information regarding membership or tournament matters can be obtained from W. J. Morgan, 1 Maiden Lane, New York.

TOO MUCH WEIGHT AT BOSTON

The board of stewards of the Massachusetts Automobile Club has decided the only protest filed with it at the Memorial day race meet. It was contended by Lorenz Robbins, who drove an Orient Buckboard, that the Darracq driven by H. V. Chamberlain and which won the contest, weighed over 1,000 pounds, the class limit of weight. The stewards decided in favor of Mr. Robbins, who thereby secures first prize. The second prize goes to William Jameson, who also drove a Buckboard, and the third to A. R. Bangs, who operated a Franklin.

A tour of Holland will be made by the Dutch Automobile Club, the termination to be an automobile fete at Apeldoorn.

MOTOR AGE

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IMITATING ROAD CONDITIONS

The aftermath of discussion relative to the interdicted Paris-Madrid race has brought out in Paris an almost popular demand for a specially constructed and reserved automobile race track.

Such men as Darracq, Mors, Charron and Fournier express a desire to put on foot a movement toward this end, and it is highly probable that actual preparations for the construction of an automobile race track will be commenced before many weeks.

This same idea has attained a considerable growth in America and without doubt, just as the Paris-Madrid race marked the end of one class of automobile racing, the special track will mark the beginning of a new era of the sport.

Then also will arise generally the question which is already stirring the automobilists of France—what kind of a track? Some advocate a straight racing oval well banked and uniform in the character of its surface.

This track would offer the greatest advantages for speed performances, but would be capable of testing only the speed of cars. It would not bring out their reliability or endurance, and hence another kind of track entirely is proposed—one in which all of the conditions met in road driving are duplicated.

The latter form of track would comprise imitation hills, turns, soft surfaces, etc., and a race over it would subject the car to the same rigid trials which it must undergo in a great road race.

The factor of safety would not be as great as in the case of the uniform oval, but the sport would probably prove more interesting and varied, and the lessons taught by the races would be much more valuable.

Duryea hit upon almost the same thing last winter at the annual meeting of the National Association of Automobile Manufacturers when he proposed, in place of a regular endurance run, a contest over some improvised course at a suitable fair grounds.

A course laid out primarily as a race track, with all of the difficult conditions of average road travel, would serve the double purpose of providing for both races and speed-limited endurance tests.

At but a slight additional expense the grounds might be made to include steeper grades than those of the track proper, that

difficult hill climbing contests might be also held independently of other events.

In a word, the grounds would be a veritable automobile testing headquarters where competitors might try their cars for speed, for hill climbing ability, for speed and endurance or for endurance at limited speed.

It would allow untrammeled sport and take the racing car off of the public road except when that road should be set aside for strictly managed events.

It would allow the gratification of sporting proclivities without danger of newspaper reaction detrimental to both the industry and automobiling generally.

LIGHT CARS IN HEAVY CLASSES

One of the most gratifying changes in the recently remade racing rules of the American Automobile Association is that in the classification of cars which makes it possible for light cars to compete with heavy cars.

There never was a more popular track victory than that at the Empire City track Decoration day when Joe Tracy on a 1,600 pound Panhard defeated a field of cars weighing over 2,000 pounds. Yet he was disqualified because by the old rules, under which the race was run, he was not eligible to race in that class, which was specified as being for cars weighing 1,800 pounds or over.

The old rule was not for the good of the sport. The new rule tends to encourage a spirit of true sportsmanship in which credit goes to the best man and car.

It also gives a new stimulus to the building of light, moderate horsepower cars, in contradistinction to cars of enormous horsepower and great weight, but without increased carrying capacity or utility.

UNFAIR PUBLIC DEMANDS

In one way the automobile is its own enemy. It has accomplished so much and has become able to do so much, that the public has reached a point of unlimited expectation.

For instance take the man who asks for automobiles at about \$400 or less. What does he want for the price of a good horse and buggy outfit? A car equal in capabilities to the horse and buggy?

Not by any means. He wants a car which will go from four to six times as fast, and travel twice or three times as far at the same expense.

Would he take a little car with solid rubber tires, large wheels, short wheel base, light body and upholstery and which would travel 5 or 6 or at the outside 10 or 11 miles an hour?

He would laugh at the man who offered to sell it to him.

He wants a real automobile—big body, long wheel base, pneumatic tires, deep upholstery, a speed of from 25 to 35 miles an hour, a radius of 100 or 150 miles an hour, and he wants it for the same price that he paid for his measly old horse and runabout. Then he will buy one.

Here is the little Orient buckboard, capable of carrying two persons 30 miles an hour under fair conditions, and selling for \$375.

Does that satisfy the wise individual who winks at the automobile and promises to buy when they are a lot cheaper? Hardly.

He objects because the motor is in sight, forgetting that the horse which pulls his buggy is also fully exposed to view. He ob-

jects because it has not a couple of hundred dollars' worth of body and upholstery.

He forgets that it furnishes more speed and endurance than any horse drawn conveyance on earth at the same cost.

He is not satisfied that some of the refinements of carriage construction are sacrificed in order to give him a 30-mile an hour car at the cost of a 10-mile an hour rig.

He wants both; he wants everything, and he wants it for the price of a horse and buggy, and, if possible, for the price of a bicycle.

This unfair demand for so much for so little, exists partially because of the natural greediness of the human race and partially because of the wonderful performances of automobiles within the past few years.

The public has been educated to expect more and more of the modern means of travel, but it has not been educated to pay more.

It has not perfectly realized the absolute necessary cost of making a car which can do so much more than any other road vehicle.

It notices only the achievements and then compares the cost with that of mediums of travel furnishing only a small percentage of the actual results secured.

It welcomes all that the automobile can do. It glories in the great progress that is being made. It puts the automobile in a class by itself out of comparison with other means of travel—and then kicks because the first cost is greater than that of a side bar runabout and a spavined gray mare.

OVERHEARD IN NEW YORK

"Ve ain't roasted anyone for the long time. Why don't you roast MOTOR AGE? Dey need it—sure, I don't like 'em. Roast 'em, can't you?"

"But what shall I roast them about, anyway?"

"Oh, mine got, you was a bum editor. Roast 'em about anything. Just make up a lot of dot gin fiz visdom for which we was famous and shoot it at 'em. I say we haf-got to roast 'em. For what do I pay you so much? Here is it is, right here—see dot, they have said in dot picture dot Barney Oldfield has taken de mile record away from Alexander Winton. Roast 'em for dot. Roast 'em hard. Den dey shall roast us back and we vill get some advertising for nothing. I like dot kind of advertising—I get so leetle of it. And don't forget dot you tell the office poy dot I wrote it—I, who makes de living for you all."

SAVING REPAIR BILLS

Automobile dealers and those who conduct exclusive repair shops estimate differently that from 75 to 90 per cent of the work that is brought to their respective shops might be readily accomplished by the users of the cars, were the owners so inclined.

In other words, the percentage of actual repairs due to breakages and other cause which demand more expertly applied remedies than are within the range of the average owner and driver of an automobile, represent but from 10 to 25 per cent of the work of the automobile repair shop.

The daily paper and its little joker are constantly making more or less mild humor out of the repair department of automobiling, printing bogus, if witty, duplicates of repair bills and aiming generally at the creation of the impression that automobiling, like marriage, is an expensive habit.

The statement of repair men that much of their work is of a class which requires only average ability, care and common sense and few tools, is indicative of an under-current of economy which can be practiced in automobiling as in anything else, and which may relieve the user of the car of a great part of the expense about which the light and airy jokers construct the fables for which they receive their weekly pay.

A certain class of users will always take every trouble, no matter how small, to the repair man. This class cares nothing for the expense. It wishes merely to avoid personal bother.

Another and greater class will gradually learn two things which effect the economy of motor car maintenance. One is the trick of making slight repairs and the other is care in operation to prevent the necessity for those and more extensive repairs.

The infusion of young, inquisitive blood into automobiling creates a common desire to understand thoroughly the thing that is handled.

The handling will consequently be more carefully and more intelligently carried out, the troubles which are commonly lugged to the repair shop will be obviated to a great extent, and when not obviated will ordinarily be overcome by personal effort.

The repair shop as a business will prosper,

blacksmith has still as much as or more to learn about automobiles than the users of them.

Here automobiling is found by necessity to be economical. The condition which, by inclination on the part of the automobilists, will some time be reached in the city has been forced in the country.

Automobilists away from skilled assistance have become skilled themselves. They have reduced automobiling to a condition of practicability and economy which has convinced their neighbors of its great advantages, and nowhere is the general utility automobile better liked or making greater progress in proportion to population, wealth, etc., than in the smaller communities.

There are faster things than automobiles. Electricity travels at the rate of 280,000 miles a second. There is at least half a mile of wire in the secondary winding of an induction coil, and if the motor is running at 1,600 revolutions a minute, with a four-cycle motor, there will be 800 contacts a minute. This means that while the car has traveled perhaps a quarter of a mile in a minute, the electricity has covered a distance of 400 miles in the same time.

Perhaps when the German Automobile Club was informed of the burning of the Daimler factory at Cannstadt, including the destruction of the 90-horse-power Mercedes cars which were to have been used for the Gordon Bennett cup race, it exclaimed, "Well, there will be no chance of a low mechanic getting a chance to drive one anyway."

A bank at Brussels, Belgium, employs an automobile for the transportation of cur-

rency through the streets. It is a sort of perambulating clearing house, with its enclosed body divided into tillers and pigeon holes and fitted with other conveniences for the rapid handling of the coin of the realm.

A fund is being raised to erect a monument to the late Marcel Renault. The subscriptions so far amount to about \$800. The monument will be erected on the spot where his fatal accident in the Paris-Madrid race occurred. A similar fund is being raised for the benefit of the families of the unfortunate chauffeurs who were killed in the Paris-Madrid race. The automobilists of France and other countries are responding liberally to both these subscriptions.

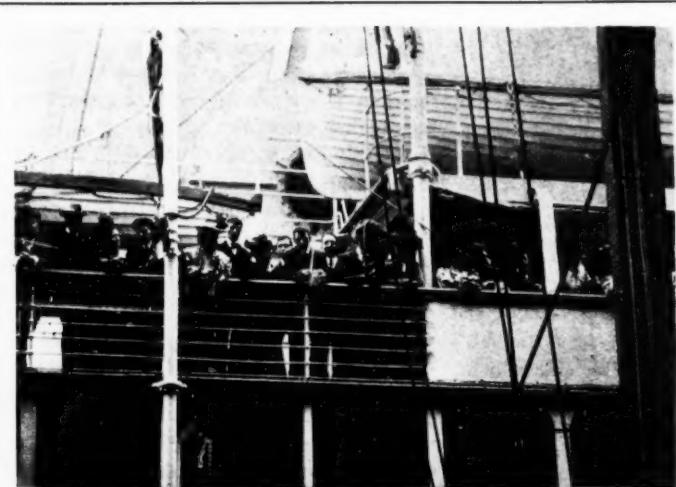
It is rumored that when President Shattuck returns from Europe the elevator leading to the second-floor home of the Automobile Club of America will be inscribed with a sign: "This is a lift." Perhaps also petrol may become the official fuel on endurance runs.

The city tinsmith had just finished tacking the number on Willie Sponleigh's electric runabout and as Willie jumped daintily in and drove away, he smiled and whispered to himself: "Now I am a real dashing criminal."

Mr. Stead, who was badly injured in the Paris-Bordeaux race, has made such satisfactory progress that he has been transferred from Libourne to Paris, and his complete recovery is assured.

The tide is turning. One of the new patterns for horse-driven carriages has an "automobile seat." The manufacturers say these seats are built because other originalities are scarce.

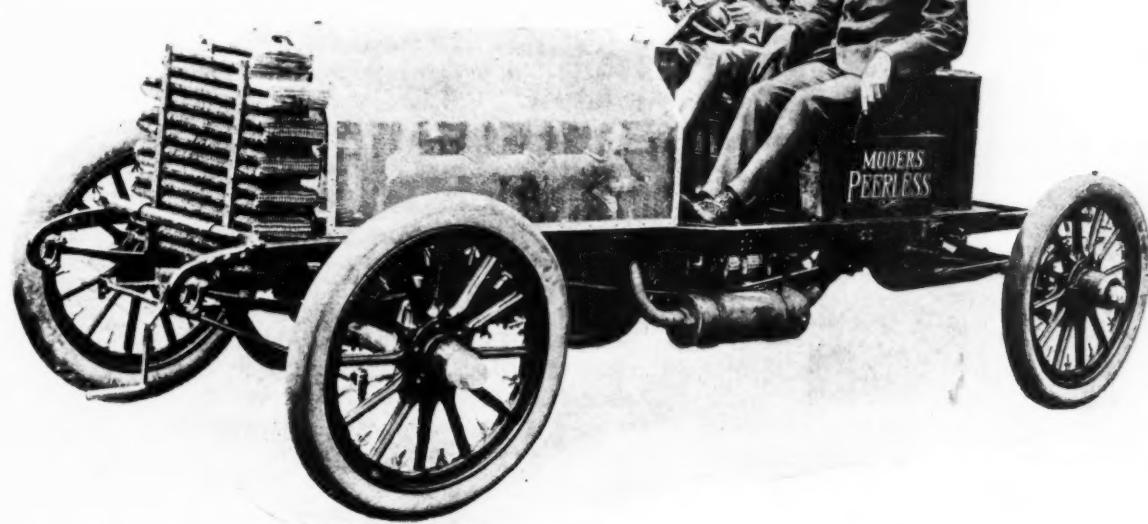
The principal French automobile manufacturers think that speed races on the roads serve no useful purpose, and should be abandoned in favor of sounder tests for durability and reliability.



The Mooers Party on the Teutonic Just Before Sailing for Ireland—Mooers in Center with Cap in Hand

with the increasing use of automobiles, but the character of the bulk of its work will surely change from that of curing minor ills to that of accomplishing work which actually requires repair shop facilities and skill.

The reliance which the city automobilist places upon the repair man is in strange comparison to the self-dependence of the automobilist in smaller communities, into which no specialist has found his way and where the local



Louis P. Mooers on the 80-Horsepower Car Which He Will Drive in the Gordon Bennett Cup Race

BAD STREETS AND INCOMPETENT DRIVERS EVILS OF MOTOR DELIVERY



UNDRED and five, Mac."

So spoke the delivery boy as he swung himself on the step of the automobile delivery wagon in the rear of Marshall Field's big retail store last Friday afternoon.

"All right," responded Mac, the driver. "We've got 2 minutes yet before we start. Let's rest."

"Does that mean 105 deliveries?" hazarded the MOTOR AGE representative. He was seated beside the driver, ready to go over the regular route and learn if possible some of the advantages of the automobile delivery car over the wagon drawn by horses.

"That means we have 105 packages to deliver before we get any supper. We sometimes run as high as 200, but today we have an easy load and it won't take long with this wagon."

The driver was in a talkative mood, and as the MOTOR AGE representative wanted the views of the man most intimately connected with the wagon, its advantages and disadvantages, Mac was allowed to talk undisturbed, with an occasional question to help him along.

Promptly at 3:30 Mac grasped the steering lever, turned on the current and swung the car around an elevated railroad post onto the street car tracks, and an instant later was going down Wabash avenue at a good 6 miles an hour. A street car gong behind began to clang, and Mac pulled out on the rough cobblestones.

"This is one of the greatest enemies to the automobile delivery," he said, indicating the rough-paved street. "When we go bumping over these rocks and through holes of all sorts and sizes, it don't do a thing to our batteries. I've been drivin' for Marshall Field for 15 years, and I know Chicago streets pretty well, and they're on the bum. We get a few blocks of cobblestones, then some asphalt, some cedar blocks with half the blocks gone, then a slice of prairie mud road. If variety is the spice of life, the drivers certainly get the whole ginger jar."

"Would you rather drive an automobile than a team of horses?" queried the MOTOR AGE man, as he held onto the seat.

"Sure thing," replied Mac, dexterously turning back onto the car track again. "When a fellow starts out with horses, he always feels sorry for them if he's got a big load, because he knows it is hard work to go bumpety-bump over these streets. Then the horses have to be watched all the time, because you can never tell when they are going to get scared or something. With this wagon, all I have to do is turn the current off and we have stopped. I can stand it on its head if necessary to avoid



Chicago Streets are Rough

running into something. I have been running this wagon off and on for 5 years and never had an accident yet. Had to reverse quick once when a man got off a street car and ran in front of me. If I'd been driving a team I'd a struck him sure. He wasn't hurt, but a battery connection was blown out.

"What do you do when you have a break-down?"

"Fix it," laconically responded Mac. "That's where the people who own these wagons sometimes make a mistake. They employ drivers who don't understand how to run a motor or repair small breaks, and in consequence they pay more for repairs than they would if they hired competent men. Then they complain that it costs more to run these wagons than the horse wagons. It would be just as reasonable to hire little boys to drive the horses, and when they ran away, blame the man who sold them the horses instead of their own shortsightedness in hiring irresponsible boys for drivers.

"Just a few days ago I was at the barn when a man who had been driving an automobile delivery for over a year brought his



"He Got Off a Street Car"

wagon in and said something had happened to it, but he didn't know how to fix it. I looked at the motor and found it ruined. He had had a little break several miles out which could have been fixed easily if he had known anything about a battery, but he brought the disabled car all the way to the barn, and by the time he got there the motor was worthless, and the cost for repairs amounted to several dollars. A good horse generally gets good treatment, and a good machine deserves to be handled properly if you want to get satisfactory results. The biggest objection to the automobile is the repair bill, but if you give us good streets and competent drivers, the automobile will put the horse out of the delivery business.

"Another advantage of the automobile is that we can make quicker delivery with it. For instance, I can load up at the store and run out to Forty-first street, where the route begins, and have the load nearly delivered before a man with a similar load with a team gets started from Forty-first. We used to load the goods in trunks at the store, haul them out to Forty-first in a big wagon, then unload and reload into the delivery wagons. This meant handling the goods three times, and delivery was an hour or two later. Stopping that is an indirect advantage of the automobile which should be credited against the repair bill."

While Mac was delivering this discourse the automobile was winding in and out from Prairie avenue to the lake, stopping at the homes of millionaires; in front of flats where

the delivery boy ran nimbly up to the third floor, dodging hard-hearted janitors who would insist on all packages being delivered in the rear, and, again, being met with a smile at the front door of the less pretentious homes.

At some of the stops the wagon was surrounded by the crowd of inevitable small boys who were not backward in exhibiting their curiosity regarding the vehicle without horses.

"Say, Fatty, how fast kin yer go?" "Mister, do you keer if I ring the bell?" and "Wisht I had that feller's job," were some of the remarks made by the youngsters as they stood in a row admiring the wagon.

The full-grown folks were not so obtrusive, but the great majority looked out of the corners of their eyes, showing that even the Chicago citizen is not yet fully "city broke" to automobile delivery wagons.

"They used to come in crowds and watch us start from the store," said Mac. "One rainy day a fellow stepped up to the car while I was charging it and asked what I was doing. He put his hand on the car as he asked the question and received the full force of the current. He found out what I was doing before I had time to say anything, and the way he broke loose and went up street was a caution. But they are much less curious nowadays, and most people refrain from asking foolish questions.

"Thirty-first street is the dead line for us," he continued. "We finish on Indiana to Sixteenth and then make a straight run down Wabash. Give us a street car track and a clear right of way, and you'll see the other delivery wagons left behind."

And Mac made good. He turned on the power and sped swiftly past a half dozen delivery wagons drawn by tired-looking horses, and at 6 o'clock turned into the stable in Pacific avenue.

"And she's just as fresh and lively as when we started. The S. P. C. A. can't find any fault with our fast driving, and the batteries haven't been overworked. We made the run with a clean record." And Mac winked ponderously as he climbed down from the seat. There were no horses to unhitch and feed and bed down for the night. The only work required before the next trip was that the battery be re-charged.

"And that's easy," said Mac, as he bade the MOTOR AGE representative good night.



Ready for Charging

WANTS TO BUILD GREAT STEEL HIGHWAY

General Roy Stone, the Veteran Good Roads Advocate and Promoter of the Steel Roadway, Asks Assistance of Manufacturers and of Automobile Club Men in a Project To Build a 112-Mile Toll Course on Long Island

New York, June 15—General Roy Stone, well known as an apostle of highway improvement, from his connection with the road department of the Agricultural Department, has appealed to the National Association of Automobile Manufacturers, the Association of Licensed Automobile Manufacturers and the American Automobile Association to aid him in the promotion and financing of a double track steel toll road from the terminus of the Blackwell's Island bridge at Long Island City to Montauk Point at the east end of Long Island, a distance of 112 miles.

EXCELLENT OPPORTUNITY AT HAND

It will be remembered that a year ago there was much mysterious talk of a motor vehicle speedway to be built by the millionaires of the Automobile Club of America, connecting the fashionable residential section of the Island with New York. When General Stone unfolded his plan a MOTOR AGE man asked him as to the progress and status of the speedway already promised.

"I asked President Shattuck about it before he left for Europe," replied the general, "and he said nothing was being done. I accordingly had no hesitation in applying to the officials of the national trade associations to assist me in financing and putting through the scheme. Such a road would double the number of automobiles in use in and around New York. President Day, of the A. L. A. M., and the N. A. A. M. officials thought well of the scheme and I feel confident of their co-operation."

LETTER TO THE N. A. A. M.

General Stone presented his scheme to the N. A. A. M. in a formal letter, in which he said:

The unfortunate result of the late Paris-Madrid motor race adds another reason for the speedy development of special roads for automobiles; otherwise it will put an end to road racing everywhere and destroy one of the important incentives to an extended use of the machines. There were reasons enough before for special roads, and, in fact, the sport and industry can never attain their proper development without them.

Apparently the best place adapted to such a road at present is the backbone of Long Island, and a little systematic work ought to develop a project for a road in that locality which would probably result in its being constructed.

An ideal motor road would be a wheel-way like that in Murray street, New York—the roadbed nearly flat with no ditches and only shallow gutters, and with the space between and outside the plates well laid down in grass. On such a road there would be no dust or mud; no glare from sunlight, no reflected heat; while the road would suffer no wash from rains and no wear of any kind; and if it were bordered with stout hedges no serious accident could be possible to any motor, even if its control were lost. It would be like driving over a fine lawn, except that the power required would be trifling.

I shall be glad to present this subject to your executive committee in person, and if it seems important enough to it to have it take steps to raise a small fund for the exploration of the route, and a general study of a plan of construction and operation of the traffic to be expected and the legislation required. A few thousand dollars—to be expended by a committee of the donors—would be sufficient to put the project in shape to command itself to the many associations and individuals who would be interested.

I am fully assured that, even as to first cost, a

steel road will be cheaper than a stone road on Long Island, while its maintenance will be as nothing. I propose hereafter to have the rails rolled with slight indentations or depressions to prevent the slipping of tires, and perhaps to make the plates somewhat wider than those on Murray street. If your association should decide to take the matter up I shall be glad to give it some personal attention on my return from Europe in July.

Such a road as this, straight away for 100 miles or more, would be the race course of the world, while it would develop Long Island beyond all calculation. The road should approach as closely as possible to the Fifty-ninth street bridge, and it would probably pay to extend it to Montauk Point. The road should be kept clear from grade crossings. It will necessarily be a toll road.

DETAILS OF THE PLAN

Asked for further particulars, General Stone submitted the following details of his proposed road:

"Starting from the eastern landing of the Blackwell's Island bridge, near the court house in Long Island City, the line could run between Jackson avenue and the Long Island railroad as a sunken, enclosed road, which will allow full speed from the outset; and continue nearly parallel to the same avenue, following, if practicable, the right of way of the abandoned Oliver Charlick railway to the Flushing meadows, passing beneath the North Shore railroad and the Corona electric road at the point where they descend upon the meadows; thence across the meadows along the line of the old Long Island Central railroad—better known as the "Stewart" road—and following that line through its long summit cutting to Creedmoor and Floral park, touching there Belmont's new race course; thence across Hempstead plains and along the southern foot of the Bethpage Half Hollow, Brentwood, Ronkonkoma, Coram and Dix's hills, keeping the middle line of the island, between the heights and the plain, as far as the heights extend, and then straight through the level pine woods to Good Ground, and so on to Montauk.

"This location would secure a perfect alignment, easy grades and cheap construction, while it would serve for branching north and south under equal conditions. The total distance would be 112 miles.

METHOD OF CONSTRUCTION

"The motorway should have a double track of steel plates, each track about 5 feet between centers, with 10 feet space between the tracks and the same outside, making the whole roadway 40 feet wide. Outside of this would be the hedges and a wire netting fence to keep out animals, large and small, and beyond that a row of trees on each side. All highways should be carried over the motorway by raising them about 5 feet and depressing the motorway to the same extent.

HANDLING THE TRAFFIC

"The entrance to the motorway would be by gates from the important highways, and these would be the toll gates. When used for formal races, all other traffic could be shut off.

"For the benefit of those who do not own motor carriages or trucks, motor coaches could

be licensed to run at a low rate of fare. Hotels at the terminus and inns at the toll gates would soon accommodate and attract travel.

"The number of motor carriages in and about New York at present is stated to be 3,000. With the current rapid rate of increase, stimulated by the certainty of a course for speed, the number would reach 5,000 or more by the time the road could be finished.

"Between midnight and morning the road could be used for motor freight vehicles for the farm and garden traffic. Motor trucks, moving at 12 miles per hour, could cover 84 miles between 12 o'clock midnight and 7 o'clock a. m. This would extend the available garden district of the island to double its present length, and counting a width of 5 miles, would lead to the clearing, fertilizing and cultivation of 200 square miles now barren.

THE COST AND INCOME

"Such a road complete could probably be constructed for \$15,000 per mile.

"The cost of operation would be the taking of tolls and the care of the grass and hedges, little or no repairs being required for many years.

"Assuming for a venture, that the local motor carriage, coach and truck traffic of the island would pay these expenses, and that the 5,000 motor carriages in New York would average a trip over the line every 3 months, at a toll of 3 cents per mile, the net earnings would be \$134,400 per annum, without considering the regular summer motor travel from New York to the Long Island shores, nor the income from local, national and international motor racing, or the motor travel to the daily horse races at the Hempstead course, which will be brought within 15 minutes by motor from the Fifty-ninth street bridge.

"With the development of the island and the increase of motors about New York, these earnings would increase indefinitely."

William C. Whitney, W. K. Vanderbilt and other millionaire Long Island colonists are named among those who had promised to lend financial aid to the original project.

STOPPING TESTS IN ENGLAND

The Automobile Club of Great Britain was entertained at luncheon on May 28 by Mayor Murchison of Hertford. In a toast on "Automobilism" the suggestion was made that instead of a general system of numbering, in cases where the justices thought a penalty not exceeding \$10 and costs was insufficient, they should have power to order the driver to carry for a stated period a number on any car he might be driving. In the afternoon a series of trials was held to test the comparative stopping powers of motor cars and horse-drawn vehicles. In the first trial a Lanchester car was brought to a stop in 15 feet 9 inches, while the horse was not stopped until it had traveled 24 feet 9 inches. The second trial was won by Captain Deasy, who brought his 22-horsepower Rochet-Schneider to a standstill in 24 feet 8 inches, while his horse-drawn rival went 42 feet 5 inches.

In Vienna dog owners are responsible for motor and cycle accidents resulting from dogs not under control. If a dog pursues a car, the owner of the canine is liable to be prosecuted.

A new automobile club has been formed in Sweden under the patronage of the crown prince. There are now two clubs in the country—at Gothenburg and Stockholm.

CHICAGO TANGLE NOT UNRAVELLED

Automobiling in an Undetermined Position, Owing to Efforts To Enforce the Licens- ing and the Numbering Ordinances

The Chicago Automobile Club has appointed a committee consisting of Chas. E. Bartley, F. C. Donald and President Chas. W. Gray to outline a course of procedure in fighting the license and numbering ordinance. The club has decided to co-operate with A. C. Bunker in his suit against the city. The committee will report to the club the latter part of this week.

The ordinance passed by the South Park board went into effect June 15, but there was no particular attempt made to enforce it. Several owners complied with the law and put numbers on their cars, but the large majority who ignored it were not molested. The South Park board is waiting to see what the city council does. The council is dragging its ordinance along, and meanwhile the automobile owners are patiently awaiting results, firm in the belief that the ordinance will be eventually defeated.

THE BANKER CASE

An injunction was granted last week by Judge Healy, of Chicago, restraining the city from enforcing the ordinance compelling automobile drivers to secure licenses and requiring all machines to display numbers. The restraining order is based on the ground that the city has no authority to require a license on automobiles or to collect license fees. The plaintiff, A. C. Bunker, maintains that if the legislature grants such authority it must include all private vehicles, or the ordinance might be attacked as class legislation. The city did not appear in the proceedings and there was no defense of the ordinance.

ARDENNES CIRCUIT TO BE RUN

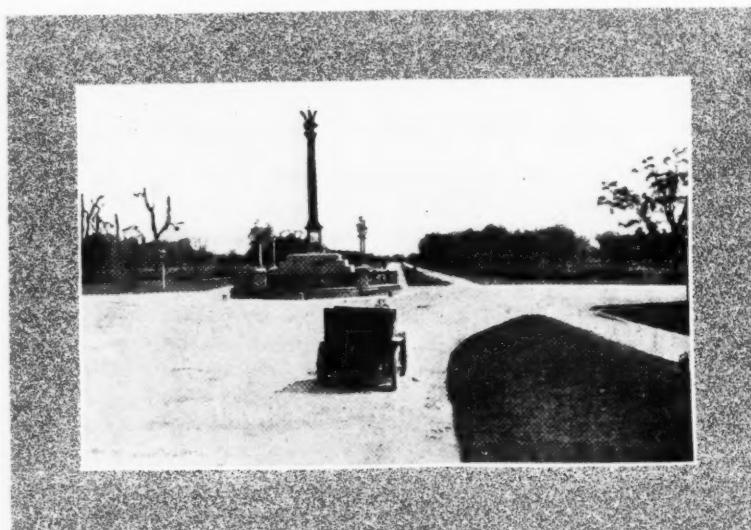
After all the Ardennes circuit run is not to be abandoned. Extraordinary precautions are to be taken to insure safety. There will be thirty controls and all dangerous points will be marked by flags. Crossroads will be barred and traffic over the course will be entirely suspended. The race will start next Monday. The heavy vehicles will be sent away between 3 a. m. and noon and the light racers from 12:30 to 8 o'clock in the evening.

AN OLD FASHIONED FOURTH

Cleveland, O., June 15—The Cleveland Automobile Club is planning a unique outing for July 4. The merchants of the thriving little city of Elyria, 27 miles west of here, are arranging for a huge celebration on that day, and they have invited the members of the Cleveland Automobile Club and automobilists in general to participate in the festivities. They propose to make the automobile the shining light in the celebration. There is to be an automobile parade in the morning, and as an inducement for a large turn-out, the promoters have announced that every one coming to the city in an automobile will be given the best hotel dinner the town affords, free of charge. In fact they offer the three

keys of the city to the automobilists. In the afternoon there are to be bicycle and automobile races at the fair grounds and the members of the Cleveland club, who have had experience in such matters, have been asked to take entire charge of affairs. Liberal prizes are to be offered to contestants. There seems little doubt that a large party of Clevelanders will enjoy the hospitalities of the Elyria merchants. The road to Elyria is the best out of Cleveland and as arrangements will be made to take care of vehicles, it is stated that even electric vehicles will have no difficulty in making the trip.

The clerk in charge of automobile licenses states that there are now more than 800 automobiles in the city according to the num-



MOTOR AGE

Phoenix Park Monument That May Be
Removed To Establish Motor Race Course

bers he has given out. They are increasing at the rate of two or three a day, and it is figured that the 1,000 mark will be passed within a few weeks. It is believed that Cleveland has more automobiles per square inch than any city in the country, and with fifteen or more factories grinding them out, there is no good reason why she should not.

HILL CLIMB POSTPONED

The hill climbing contest up the serpentine drive in Highland Park, Pittsburg, which was set for last Saturday, was postponed for 1 week on account of bad weather. At the hour set for the race nearly two dozen entries had been registered, and in consequence of the delayed date it is expected that almost double the original number of starters will appear.

PROGRAM OF THE IRISH FORTNIGHT

- July 2—Gordon Bennett Race.
- July 3—Gymkhana at Ashtown, Phoenix Park, and Garden Party at the Viceregal Lodge.
- July 4—Speed Trials in Phoenix Park.
- July 5—Off Day.
- July 6—Tour to Newcastle.
- July 7—Speed and Hill Trials at Castlewan.
- July 8—Return to Dublin.
- July 9—Tour to Cork.
- July 10—Heats of Motor Boat Race and Speed Trial of Cars.
- July 11—Final of Motor Boat Race.
- July 12—Off Day.
- July 13-14—Tour in County Cork and County Kerry.
- July 15—Hill Climb on Killorglin-Tralee Road.

PLAN A MILE COURSE FOR DUBLIN

By Removing Monument in Center of Phoenix Park Finest Park Driveway in United Kingdom Would Be Opened

The people of Dublin are discussing the advisability of removing the monument in Phoenix Park in order to convert the main road into a mile racing course. The monument stands right in the center, and from the standpoint of appearance it is out of place, as it interrupts the view of the finest stretch of road in any park in the United Kingdom. The monument would look just as well in some other location, and there are no sentimental reasons for keeping it where it now is.

By removing the monument and converting the road into a speedway, speed trials could be given yearly, and thousands of people would thus be drawn to Dublin. As a compromise in case of objection on the part of the public to the entire removal of the monument, it has been suggested that the railing and coping on each side, including the four lamp posts be removed temporarily each year, so that a car could clear the monument with a very slight curve. By cutting away 20 or 30 feet of the grass on each side of the monument and making the road level, two cars could safely pass at top speed. The objection to this method is that it would be rather expensive if done yearly.

The monument was built in 1745 by the Earl of Chesterfield under the misapprehension that the park was named after the fabled bird, and the pillar was erected with the figure of the phoenix arising from its ashes. The park, however, really received its name from a well in the neighborhood, which in Irish was called Fionn-Uisge, the English pronunciation of which is "feenisk." This was gradually changed until the name Phoenix was officially given the park.

IRISH FORTNIGHT MISCELLANY

The railway crossings in Ireland are all above grade, so there is no danger to be feared from them by motorists.

Neither Winton nor Owen will use their racing cars for preliminary runs over the Gordon-Bennett course, the use of fast cars being prohibited.

Among the precautions for safety the automobile club will distribute among all the residents in the neighborhood of the Gordon Bennett route pictures vividly illustrating spectators suffering from automobile accidents. It is hoped thereby to impress upon them the risks of venturing on the road during the race.

A speed of 20 miles an hour will be allowed through the controls during the Gordon-Bennett race. This permission has been granted by the local government board so as to save time.

The Irish judges are thinking seriously of postponing their circuits, which usually begin on the first of July, and not holding any court until after the Gordon Bennett race.

Even the judiciary is taking an interest, and the members think they should enjoy the greatest event that has ever been offered in racing circles in Ireland.

The French contestants in the Gordon-Bennett race will not reach Ireland until about a week before the race. If the weather happens to be bad they will not have much opportunity to practice on the course.

The stands at the start of the race near Ballyshannon will be reserved for the members of the Automobile club and their friends, so there will be no accommodations for the general public.

The Hotel and Tourists' Association of Ireland has issued a letter dealing with the question of extortionate charges during the fortnight, in which they pledge themselves not to make or in any way countenance the making of excessive charges to visitors for hotel accommodations on the occasion of the visit of King Edward and of the automobile race for the Gordon-Bennett cup. Tourists visiting Ireland will be supplied with a list of these hotels by applying to the secretary of the Automobile Club of Great Britain and Ireland.

Boiled chicken with bacon and greens is the favorite dish with Irish cooks, and the visitor who wishes to make a favorable impression on the autoocrat of the kitchen and at the same time do a favor to himself should order accordingly. Irish-cooked bacon is even better than Irish-cooked Irish potatoes.

Some of the large warehouses near the custom house are being opened by the Dublin port and docks board for the storage of motor cars. The buildings are well suited for the purpose and the accommodation is practically unlimited.

Special boats will be run from Holyhead to Dublin, if a sufficient number of cars are taken over. An average of forty cars can be carried on the decks of such boats.

WINTON AND OWEN STUDY COURSE

Alexander Winton and Percy Owen, members of the American team in the international cup race, have been studying the course daily since their arrival in Ireland.

Both are quoted as expressing themselves greatly pleased with it and declare that the roads are far better than any in this country.

"There could not be better roads," says Mr. Winton. "They are as good as any roads I ever saw or traveled over. There is only one difference and that is they are narrower. There is no turn in the course that cannot be traveled at 15 miles an hour."

In response to a query as to the chances of the American team Mr. Winton replied that he and his mates had no hopes and no fears.

LORRAINE BARROW SUCCUMBS

Lorraine Barrow died at 2 o'clock Saturday afternoon at Libourne, France, where he had been lying since his accident in the Paris-Madrid race. Mr. Barrow was hurt on the afternoon of May 25. He tried to avoid a dog which crossed his track, and his car struck a tree with terrific force. His chauffeur was killed outright and Mr. Barrow was unconscious when picked up.

Forty-seven of the fifty-one starters in the tourist section of the Paris-Madrid race reached Madrid in the specified time.

WASHINGTON FIGHT IS STILL ON

Dealers and Automobilists File New Bill Seeking To Restrain Commissioners from Enforcing Obnoxious Regulations

Washington, D. C., June 13—After extended argument on both sides, the case brought against the district commissioners by Carl J. Lockwood, an automobile dealer, to restrain the commissioners from enforcing the new automobile regulations, has been adjourned until June 18. The cause of the postponing of the hearing was brought about by the filing of a new bill of complaint by Mr. Lockwood. He submitted the petition in his own behalf and in behalf of all persons in the district who are dealers, operators or owners of automobiles, and similarly situated. Most of the averments in the second bill are similar to those of the first bill of complaint, previously outlined in *MOTOR AGE*, and are chiefly for the purpose of preventing the commissioners from putting into force the proposed numbering of cars.

Forming a part of the second bill are thirty-nine affidavits from different owners. These affidavits state that the running of automobiles on the streets is in no way a hindrance or disturbance to anyone; that the parties have read over the regulations and declare them to be unreasonable; in fact, that no necessity exists for the commissioners to enforce them.

SEVERAL RATIONAL COMPLAINTS

The bill goes on to state that section one compels the parties to submit to an examination to obtain a permit from the commissioners to do that which they have been lawfully doing for a long time. Section three is attacked because it is said to be unreasonable to compel the parties not only to have suitable lamps, but that those lamps must be approved by the commissioners. It is further contended that the part which requires a light on the rear in close proximity to the gasoline tanks is dangerous, and that the present regulations in regard to lights are sufficient. It is

claimed that section eight is unreasonable as a matter of law, as it would be a hardship to owners of automobiles to be in a position where they could be stopped by any officer when they were running their machines in a lawful manner.

Upon consideration of the new bill of complaint, Justice Gould issued a rule upon the district commissioners requiring them to show cause why the relief prayed for should not be granted.

The automobilists are thoroughly in earnest in the efforts to prevent the commissioners from putting the regulations into effect, and their counsel have put arguments that are regarded in many quarters as being unanswerable.

NUMBERS AND DEALERS

The commissioners are preparing to enforce the regulations, notwithstanding the case has not been decided by the court. Printers are engaged in preparing blanks, and they will be ready for distribution within the next few days. Separate blanks will be required for the registry of the machines and for permits. An operator who owns more than one machine must have a separate number for each one. The number of his permit need not, therefore, necessarily be the number of his machine. Dealers may thus register all automobiles in their establishment—that is to say, all those that are in use—and have numbers assigned to them. An operator's license will permit him to run any registered machine of the type for which he is qualified.

COMMON SENSE AND IDENTIFICATION

London, England, June 13—Walter Long, president of the local government board, is drafting a bill for the regulation of motor traffic, the main provisions of which are the identification of automobiles by numbers; full and undivided responsibility to rest on the owner of the machine for any injury or inconvenience to the public, and subject to this responsibility the abolition of the speed limit and the substitution of the same rules that apply to ordinary traffic.

Mr. Long says that the present regulation



limiting the speed to 12 miles an hour is not observed in practice and is not justified in logic. Such a speed might be more dangerous in crowded places than 30 or 40 miles in country roads, and there should be some allowance made for the common sense of the driver of the car.

MERCEDES GOES UP IN FLAME

Famous Germany Daimler Factory Burned—Gordon Bennett Race Mercedes Among Many Cars Destroyed

The Daimler-Mercedes automobile factory at Cannstadt, Germany, was completely destroyed by fire on Wednesday night of last week. All work was completely stopped and the vehicles which were ready or nearly ready for delivery were burned.

The Daimler company has been building a new factory at Unterdruckheim, 3 miles from Cannstadt, and work will be commenced there, so that the delivery of new Mercedes vehicles will not be greatly retarded. The loss is estimated at over \$700,000. To American purchasers alone Mercedes cars approximating \$350,000 in value were to have been delivered this summer.

M. Charley, the Paris representative of the Daimler-Mercedes Co., visited the scene of the fire at Cannstadt last Friday and says that nearly seventy carriages were totally lost. Among these were the six 90-horsepower cars that were to be sent to Ireland for the cup race. Most of the motors were in another building some distance from the fire, and these were saved.

The Wurtemburg government has placed an immense workshop near Cannstadt, and also a part of its locomotive factory at Essling at the disposal of the company, so that work can commence within a few days. The total loss is placed by M. Charley at about \$500,000. This is fully covered by insurance.

The fire will cause a delay of about 3 months in the delivery of vehicles, but it is thought the company will be up to date with deliveries by the first of next year. All carriages built from this time on will have the 1904 improvements. Some changes of importance have been made by the firm's engineers since the Paris-Madrid race.

The company has decided not to relinquish its part in the Gordon-Bennett race, and will use 60-horsepower vehicles.

Mail advices from Berlin state that the Daimler company and the German Automobile Club have agreed upon Jenatzy, Baron de Caters and C. S. Rolls as members of the regular Gordon Bennett team, with Baron de Crawhez, DeGrais and Hieronymus as members of a substitute team.

INDIANAPOLIS RACES THIS WEEK

The postponed automobile races at Indianapolis, Ind., will be held June 19 and 20. The meet will be more pretentious than the one scheduled for Decoration day. Among the entries are Barney Oldfield, Tom Cooper, Earl Kiser, E. V. Dixon, P. L. Thompson and George Weidley. The races will occur the last 2 days of the meeting of the Modern Woodmen.

ENDURANCE TEST ROUTE CHANGED

New York, June 16—Owing to the interference of a proposed Fourth of July celebration at Palmer, Mass., where a control had been established with adequate hotel accom-



MOTOR AGE

A California Mountain Coach

modations, the route and programme of the 3 days' endurance run—July 3-5—for motor bicycles to be promoted by the New York Motor Cycle Club and the Metropole Cycling Club, have been considerably changed.

On July 3 the run will be to Springfield, 145 miles; on July 4 from Springfield to Worcester and back to Hartford, 130 miles; and on July 5 from Hartford to New York, 121 miles. By cutting out the runs between Worcester and Boston the distance has been reduced 78 miles.

The rules of the contest have been amended to guard against racing. There will be secret time controls established between scheduled controls so that the contestants may be kept within the time limits all the way and not camp out for an hour or two near controls awaiting the expiration of the time limit.

REASSERTS WINTON REPUDIATED

Batchelder Sticks to Statement That Clevelander Said Shanks Had No Right To Arrange Fournier Match

New York, June 15—When asked by a MOTOR AGE man today for a statement in reply to the story from Cleveland of the current issue that friends of Mr. Winton were accusing him of setting afloat a report that Mr. Winton had repudiated a contract signed by Charles B. Shanks on behalf of Mr. Winton for races with Fournier at the Empire City and Cleveland tracks, to relieve Fournier of the blame of dodging the races, A. G. Batchelder, Fournier's representative in this country, said briefly:

"I do not think Mr. Winton will deny his interview with me on the steamer on the day of his departure for Ireland, in which he declared Mr. Shanks had no authority to sign for him. My correspondence with Mr. Shanks will show how much truth there is in the story that Fournier has tried to evade the match."

WINTONS AND RAMBLERS IN LEAD

In the Colorado Automobile Club's endurance run on Decoration day first-class certificates were awarded to E. H. Hurlbut, Winton; E. R. Cumbe, Rambler; George Eyster, Rambler; L. Lindahl, Winton; MacNeill & Penrose, Rochet-Schneider; E. A. Colburn, Winton; George Turner, Oldsmobile; M. R. Hughes, White; G. S. Riche, Autocar; A. T. Wilson, Cadillac; Robert Boone, General; W. W. Price, Winton.

Second-class certificates were awarded to Charles Bilz, White delivery; M. J. Patterson, Locomobile. Seven of the cars each made 425 marks, and the committee after considering carefully all available data, awarded

first prize to L. Lindahl, Winton; second prize to W. W. Price, Winton, and third prize to E. R. Cumbe, Rambler.

Gasoline economy plates were awarded to George Turner, Oldsmobile; G. S. Riche, Autocar, and MacNeill & Penrose, Rochet-Schneider.

ADVANCED TO THIRD READING

Massachusetts Automobile Bill Likely To Be Passed—Most Offensive Regulations Stricken Out

Boston, June 13—The state legislature has passed to a third reading the much-amended automobile law, and it now looks as though it would be finally enacted. This bill, as it now stands, provides for speed not exceeding 10 miles an hour within fire limits, and 15 miles in the country. It also provides for the registration of chauffeurs and of automobiles and motor bicycles. The amendments mentioned in the last issue of MOTOR AGE regarding punishment for infractions of the law and the attachment of locking devices have been dropped.

Next Tuesday Mr. and Mrs. Charles G. Glidden will sail from Boston for Europe, where they go to make an automobile tour almost to the arctic circle. Mr. and Mrs. Glidden, together with Mr. Robinson, of the Pope-Robinson Co., who is to accompany them through Ireland, will travel by automobile from their hotel there in Boston to the wharf of the Cunard Co., where they will board a steamer. Arriving in London, Mr. Glidden will immediately secure the Napier car that has been constructed for him, and then make a tour through Ireland, witnessing the Gordon-Bennett cup race and enjoying the 2 weeks' automobile carnival. Then he will start on the extended trip already mapped out in MOTOR AGE.

Another Boston couple that will witness the automobile festivities in Ireland is Mr. and Mrs. Harry D. Corey, who made a European trip last season with a Winton.

KEPT OUT OF HARM'S WAY

The Chicago Automobile Club made a run to McKinley Park, Thirty-ninth street and Western avenue, last Saturday, and on Sunday a run was made to Indiana Harbor. The original program called for a trip to Highland Park, but because of the unfair treatment of the automobilists by the police of the suburban towns along Sheridan road the run was abandoned.

BUDLONG ACCUSED OF SCORCHING

Milton J. Budlong, president of the Electric Vehicle Co., and of the N. A. A. M., was fined \$50 and costs by the local court of Manchester, Conn., last week for exceeding the speed limit. No effort was made to defend the charge in the local court, but the case was appealed to the superior court. The witnesses testified that the automobile was going 40 miles an hour.

The chief of police of Omaha, Neb., has issued an order to arrest any automobilist traveling at a rate of speed greater than that permitted any driver of a team of horses. The mathematicians of Omaha have figured that this means 4 miles an hour, so the motor cars will now be seen dashing down the main street of the town, making a mile every 15 minutes.

SMALL CARS LEAD IN CALIFORNIA

Runabouts and Light Touring Vehicles Prove the Best To Negotiate the Hilly and Sandy Roads Around Los Angeles

Los Angeles, Cal., June 8—The automobile dealers even are surprised at the unprecedented demand for cars. The Oldsmobile agency leads all the rest in sales, as Manager Peer has already delivered over 110 Oldsmobiles and is now unable to supply the demand. This makes nearly 200 Oldsmobiles now in use in this city and in the nearby country. The agency was opened early this year, so that the Oldsmobiles sales from the branch in this city should be over 200 for this year.

The Autocar has also had a big run and probably thirty-five have been sold here by Heinemann & Pratt. Of late a lot of Knox air-coolers have been received. The Cadillac has arrived and seems to be making a hit. About three car loads are already in use. The St. Louis runabout is probably more common here than even in St. Louis, Church, the local agent, having boomed it well.

HILLS AND SAND BAR HEAVY CARS

The big cars have not made much headway on account of the hilly roads, but a half-dozen Wintons and two Packards have been sold here this year, and the last year's model of the Packard had a fair run early in the year. The General has caught on and A. P. Fleming, who introduced it, and the Los Angeles Automobile Co., which is now pushing it, have sold several car loads, about half of which have arrived, some being rushed here with bodies unpainted.

All the Ramblers that W. K. Cowan could coax from the factory have gone into use and Mr. Cowan is anxious for more. Elmores have been waited for in vain and the agency here has been unable to get a machine for weeks. There has been an excellent and a steady demand for the Waverley and National electric runabouts and a lot of them are seen on the streets. No 1903 Peerless cars have been sold in Los Angeles yet, but a number have been purchased in Pasadena and one second-hand 1902 car was sold here last month. Mr. Cowan has received his first two-cylinder Toledo gasoline car and it is attracting favorable comment. It should have a big sale in this part of the country, for it is of the kind and weight that is best suited to the roads, the larger touring cars being too heavy for the big grades and sandy surfaces.

LOCAL FACTORY SUCCESS

The locally made car, the Tourist, has scored a success and seems to be a splendid car for this mountainous country. The first twenty-five have nearly all been delivered and are giving satisfaction. The Auto Vehicle Co. now announces that it will bring out twenty-five more cars of a larger and more Frenchy style with engines in front under a hood.

W. K. Cowan will probably be at home in his new garage on South Broadway by the end of this month. The building is of 60 feet front, extends back 150 feet, and is three stories high in front, with a one-story carriage shed. The show room will be the largest in the city and Mr. Cowan will open with about thirty "boarders" in the garage. The big show room will be used for Waverleys, Ramblers and Toledos. Mr. Cowan will keep

his up-town store on West Fifth street, but will only handle bicycles and motor cycles there.

The Pasadena Garage Co. is now in full possession of its roomy garage at 161 West Colorado street, Pasadena. This is also headquarters for the Pasadena Automobile Club. In addition to facilities for storing cars and charging electrics there is a large repair shop in the rear. The company will buy and sell second-hand automobiles from all parts of southern California, putting the cars in shape in the shop.

E. R. Braley, of Pasadena, is another new garage possessor and is now occupying a two-story brick building 35 by 80 feet. Mr. Braley sells Waverleys and Oldsmobiles. He is having a run on the Olds and there are now over twenty in use in Pasadena.

In the other cities of the Southwest the Rambler and Olds lead in number. At Santa Barbara, Ventura, Santa Ana and Pomona the Rambler is most popular. At Riverside, Redlands, San Diego, Orange, Fullerton and Whittier the Oldsmobile leads with more in use than all other makes combined.

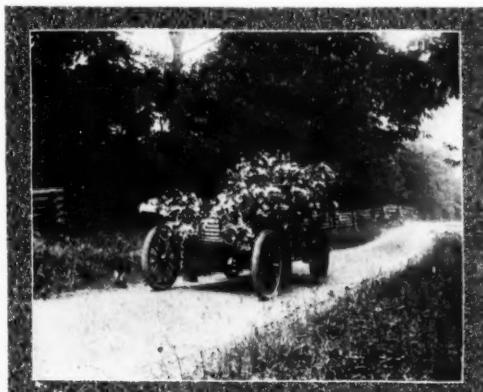
In San Bernardino the Waverley has made a hit, while the White and Autocar are found here and there in the smaller towns.

CUDELL BRANCH IN BOSTON

Representative of German Car Seeks Trade Location in the Hub—Fight Between Trolley and Automobile Lines

Boston, June 13—P. V. Clodio, of the Cudell Motor Co., spent the last week in Boston with the idea of selecting a suitable place for the establishment of a branch of J. C. Brandes, the United States agent for the Cudell. Mr. Clodio expressed himself as particularly well pleased with the business outlook in this city, and said that it was only a matter of a short time before his firm will be well and properly represented here. He considered Boston as one of the best automobile cities in the country, and is looking forward to becoming more familiar with local interests and requirements.

As a result of the establishment of an automobile line between Lynn and Nahant the "bargemen" and residents of the latter city are agitating the establishment of a trolley line along the neck of land connecting the cities. Already the elementary steps towards the organization of a company for the purpose of building such a line have been taken, and it looks as though the wealthy residents will have difficult work to prevent its construction, especially if they continue to insist upon the present exclusiveness of the automobile line established by them.



MOTOR AGE

N. D. Helbrook's Car "Winning Laurels" on a Connecticut Road

IMPORT DUTIES IN GREAT VARIETY

Automobiles Subjected to Many Queer Customs Regulations—United States and Canada Charge Most for Imports

The United States levies the highest import duty on motor vehicles. The tariff for this country is 45 per cent ad valorem. In Canada the duty is 25 per cent, except for automobiles imported from England. For these the rate is 16½ per cent. Australia, New Zealand, Cape Colony, Natal, Orange River Colony and the Bahamas each charge 20 per cent ad valorem. In Belgium the rate is 12 per cent. Egypt, 8½ per cent, and Turkey 8 per cent. China, India and Bermuda are content with 5 per cent.

COMPLICATED REGULATIONS

In some countries the duty is assessed by weight, and here the regulations are more complicated. In Russia all motor vehicles are dutiable as carriages according to their kind, the motor being dutiable separately at \$3.15 per hundred pounds. Where the motor is not detachable from the vehicle, and it is impossible to ascertain its separate weight, it is taken as equivalent to 30 per cent of the total weight of the car. The duty on large carriages is \$125, small carriages, \$85. Carriages completely upholstered pay an additional 20 per cent.

In Norway the rate is \$2 a hundred, and in Germany, \$1 a hundred pounds. In France the system is similar to that of Russia in the case of vehicles with detachable motors, the duty being assessed on the motor separately from the carriage. Where the motor is not detachable the cars pay on their whole weight according to class. For gas, petroleum, hot air and compressed air motors the rate of duty is \$1.10 a hundred for those weighing 550 pounds and over, and \$2 a hundred for those weighing less than 550 pounds. In Switzerland the duty is \$2 a hundred for passenger cars, and 50 cents a hundred for trade vehicles.

DUTY AT SET PRICES

In Portugal the rate is \$130 a car, with the exception of incomplete cars, which pay \$18. In Italy automobiles with not more than two wheels pay \$8.65 each; with more than two wheels and not more than five springs, \$20 each; and with more than two wheels and more than five springs, \$65 each.

In Spain the rates of duty are: For coaches and berlins of four seats, and light carriages, \$200 each; berlins of two seats, with or without folding seats, and omnibuses with more than fifteen seats, and diligences, \$75 each; all other carriages, \$50 each. In Austria-Hungary the duty is \$12 each if the carriages be without leather and not upholstered, or \$35 if with leather work and upholstered. In addition to this a duty of \$3 a hundred has to be paid on the motor alone, if it contains more than 50 per cent of precious metals, or if containing less than this per cent \$1.25 a hundred on electric and \$1.75 on other kinds of motors.

FREE WHERE THERE IS LITTLE DEMAND.

Automobiles are admitted free of duty to the Straits Settlements, Hong-Kong, Falkland Islands, Gibraltar and Malta, but the demand is not excessive in those countries. Belgium is the only country to which travelers' vehicles are admitted duty free.

WANT BIGGER CARS THE SECOND SEASON

Chicago Dealers Say Chief Reason Motorists Sell Their Last Year's Cars Is That They Bought Small Vehicles for the Experience and Now Feel Able To Handle More Powerful Cars—Condition of Second-Hand Trade in the West

In the good old days of the bicycle the man who had a last year's model was not considered thoroughly up-to-date. Each year some improvements were brought out, and the enthusiast found it necessary to relegate his old mount to the rear and come forth with the latest pattern each spring. The same condition exists to a certain extent in the automobile field. Many cars have been discarded this spring simply because they were of last year's model, the owner wanting a new car with all the 1903 improvements. Another and perhaps more frequent reason given for selling a comparatively new car is that the owner finds he wants a larger car with more power and greater seating capacity. It is generally advisable for the beginner to gain some practical experience on a small car, and when he discovers that it is a comparatively simple matter to operate the motor he feels able to handle a bigger car intelligently.

MANY FIRST-CLASS BARGAINS

The cars of standard make offered by the various dealers in their second-hand lists are nearly all in good condition and can be depended upon to give satisfaction. The prospective purchaser of a car who desires to be economical can frequently find a first-class machine at a second-class price, and the enjoyment to be derived is certainly just as great from a machine that has been used a season as from one fresh from the factory.

Some of the dealers of Chicago handle second-hand cars, while others devote their attention solely to disposing of new stock.

"There has been very little demand for second-hand cars," said Fred Pardee, of Pardee & Co. "In fact, I have been surprised that we have had so few calls. Most of our prospective customers have called for new cars. Last year we had a great many calls for second-hand cars, but the tide has turned this year and new cars are asked for. We have taken some old cars as part payment on new ones, and now have a number of the second-hand class that we will dispose of at greatly reduced figures. We are not particularly anxious to handle second-hand cars, preferring to devote our energies to this year's product."

The Electric Vehicle Co. branch does very little business in second-hand cars. Occasionally a customer comes in with an electric and wants to exchange for some other style, and of course he is accommodated. Gasoline cars are not taken in exchange. At present the Electric company has one second-hand car for sale.

J. A. Barton does not buy second-hand cars, but will endeavor to secure a buyer for prospective customers who wish to trade old cars for a Shelby or a Sandusky.

"We do not handle any second-hand cars," said J. B. McKeague, of the J. B. McKeague Co., "as it keeps us busy looking after the people who want new Darracqs and Clevelands. Of course, if some one comes along with an old car and insists on trading it in as part payment on a new car we will allow him something for it."

"We occasionally buy a second-hand automobile for cash," said A. C. Bunker, "but we

generally get all we can handle in exchange for new cars. We allow about 70 to 75 per cent of the cost price on a machine that has been used a year. We also take cars on commission—that is, we will list the car and try to find a buyer, charging a small commission for making the sale. In this way the owner may use his car until a buyer is found. We have a number of second-hand cars in stock. The reason generally given for selling a car is that more power and seating capacity is wanted. As the user learns more about the automobile he invariably wants a bigger and better car with all the latest improvements. Because of this many first-class cars are thrown on the market, and anyone wanting a small car can nearly always pick up a bargain in the second-hand list. When a man starts out to buy a second-hand car he generally finds something to suit him. Not many change their minds and buy a new car, as the price for the second-hand machine is so much lower that the new car seems out of reach."

DEPRECIATION 50 PER CENT

"We take old cars in exchange on new cars or will pay cash for them," said Manager Phillips, of the Mead Cycle Co. "The depreciation for a year's use is about 50 per cent. The invariable reason for disposing of a car is that more power is wanted. The first time a man buys an automobile he goes by the general appearance. The contour of the body and the color of the paint is what catches him. He doesn't know anything about engines, jump spark ignition or whether he is getting a two-cycle or a four-cycle motor. After a few

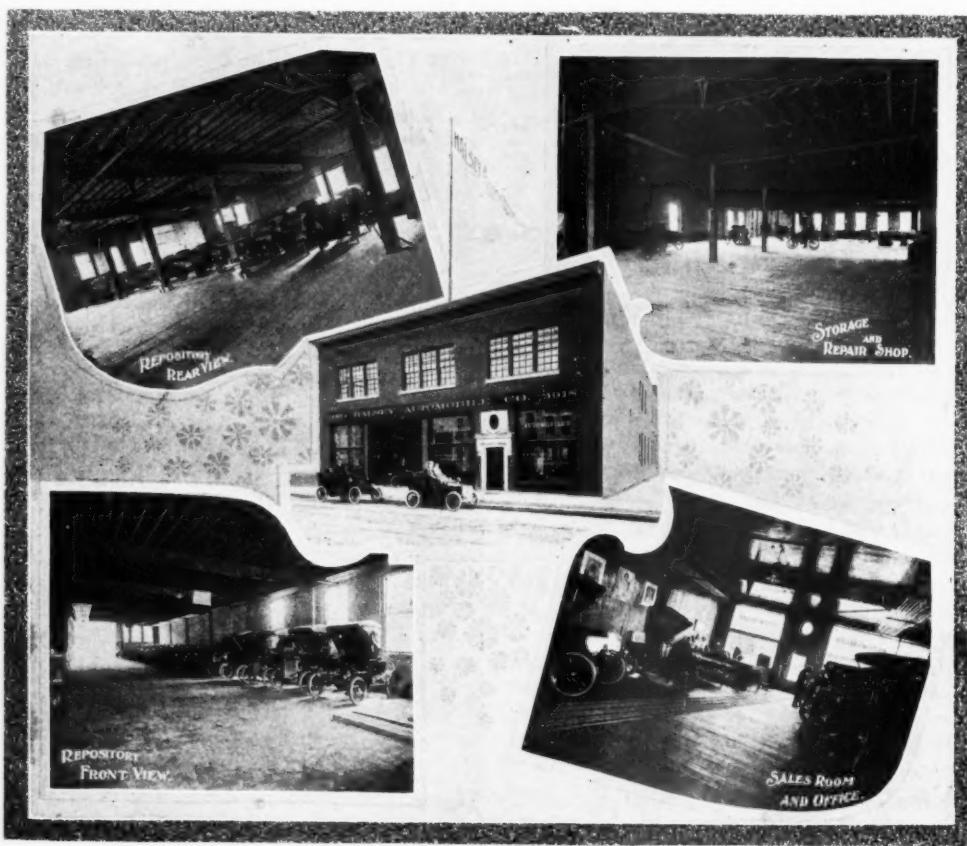
months he learns a few things from actual experience, and when he comes after a new car he pays more attention to the internal than the external conditions. A great many prospective buyers of second-hand cars change their minds after looking at our line of new cars. They find the new models have many improvements which the old cars lack, and the lower price of the second-hand car does not prove sufficiently attractive to overcome the advantages of the improvements. We have only about half a dozen second-hand cars in stock at present. We will sell cars on commission if customers wish us to do so."

SECOND-HANDS FOR EXPERIENCE

"We take second-hand cars only in exchange for new ones," said B. G. Sykes, manager of the Locomobile Co. of America branch house. We are not particularly anxious to handle old cars, and therefore will not pay cash for them. Many people who come in to buy second-hand cars finds that it is better judgment to invest in a new car, and we sell them the new one. The depreciation on a gasoline car is greater than on a steamer, the reduction for the gasoline being from 25 to 30 per cent. We have a number of good second-hand cars for sale now, the reasons for their former owners selling them being that larger cars with later improvements were wanted. We will handle cars on commission and have already disposed of a number of cars in this way this season. It is to our interest to sell a car placed with us as soon as possible, as the owner generally buys a new one of us after we dispose of his old car. The second-hand cars are sold principally to people who have never owned an automobile, and they prefer to get their experience on a car that has been used. The next season we expect to sell them a new car."

NO COMMISSION CHARGED

"Absolutely not," was the response of Manager Harry Croninger when the MOTOR AGE man asked if the Cadillac Co. of Illinois



A Southwestern Garage—Establishment of the Halsey Automobile Co., of St. Louis, Mo.

handled second-hand automobiles. "We carry only new cars in stock. Our method of disposing of the second-hand question is this: We advertise in MOTOR AGE that we have a complete list of second-hand automobiles for sale and ask prospective purchasers to send for our list. When we get the name of a purchaser of this kind we send him a card to fill out and return to us. On this card we ask him what style of power he prefers, what weight vehicle, what horsepower, whether he wants it for city or country use, the number of passengers he wishes to accommodate, the price he is willing to pay, and how much he is willing to invest if he could get a bargain. Those who have cars to sell are asked to list them with us, giving all necessary specifications and their lowest selling price. No charge whatever is made by us for effecting a sale. We keep these two classes of cards on file and when we find a person wanting something that is on the second-hand list he is immediately notified and the buyer and seller are put in touch with each other. We find this is the best way to help customers dispose of their old cars. We do not confine this exchange list to customers, however. Everyone who has an automobile for sale is welcome to list it with us. It costs nothing."

DEAL IN ONE MAKE ONLY

"The only second-hand cars we handle are Wintons," said Jack Fry, of the Winton branch. "We have a few last year's models that were traded in for new cars, and they are in first-class condition. We do not have much trouble in disposing of Winton cars that have been used, but we do not care to handle any other make. We will assist owners of cars to sell them, and for this service there is no charge."

Githens Bros. will take other makes of cars in exchange for Oldsmobiles, and will also hunt buyers for any customers who have old machines for sale. They do not, however, care to handle any more second-hand business than is necessary.

BUCKMOBILE AFFAIRS PROGRESS

The Buckmobile Co., of Utica, N. Y., elected the following officers at its directors' meeting last week: President, A. J. Seaton; vice-president, Samuel Campbell; secretary and treasurer, A. Vedder Brower; manager, W. H. Birdsall; superintendent, H. E. Streeter. The company now employs fifteen men and the capacity of the shop will soon be doubled. It is expected that the output will be one automobile a day by August 1.

HERSCHMANN GETS A MEDAL

As was stated as probable in MOTOR AGE last week, the contest committee of the Automobile Club of America has awarded the Adamus Express Co.'s steam trucks designed and entered by Arthur Herschmann, a gold medal for its performance in the "miscellaneous" class in the recent commercial vehicle trials.

CHICAGO TRADE GOSSIP

J. A. Barton has several National Electric runabouts and Stanhopes for sale.

Col. K. C. Pardee, who is now in charge of the New York branch of Pardee & Co., visited Chicago this week.

The Mead Cycle Co. reports sales of Orient Motor Buckboards rushing at the new price of \$375, but deliveries are uncertain. A car load is expected daily to fill orders on file.

CLEVELANDERS AVOID TRADING-IN

Ohio Dealers Do Not Care To Risk New Sales by Indulging Heavily in Second-Hand Trade at Their Respective Stores

Cleveland, O., June 15—Cleveland automobile dealers are debating the advisability of forming a local association. The matter is still in an embryo stage, but those who are discussing the matter believe that before another season there will be an association in active operation. Although the demand for automobiles this year has been so great that there is little occasion for trade inducing practices of an undesirable sort, the experienced dealers say they can see them coming. For instance, the practice of "trading-in" is being considered for another year, and it is known that one or two dealers have already indulged in it. The experienced bicycle dealers say that this was one of the fundamental evils which contributed to the downfall of the bicycle. By offering liberal, and frequently too liberal, inducements in the way of allowance for old machines, the enthusiasts were persuaded to pay a cash difference and secure new mounts.

DEALERS FEAR TRADING

In this manner the practice of buying a new machine every year was created, and finally it became a craze. The scheme helped to dispose of new machines, but even in the palmiest days of the bicycle business many a dealer found toward the end of the season that his net profits for the year were represented by an aggregation of old second-hand machines which could only be sold at a sacrifice. The dealers who know whereof they speak say that if this plan of doing business is once started and becomes prevalent, it will be even worse for the automobile industry than it was for the bicycle business.

With a complicated piece of mechanism like an automobile there is much greater difficulty in determining the condition of the machine and setting a price on it, than with the bicycle where all the parts may be readily examined. One dealer said: "If we attempt to trade-in automobiles it would take at least \$50 worth of work to carefully examine the machine and decide what parts were worn out, and what were not, and then there would be a lot more expense fitting new parts to place the machine in a saleable condition. The average automobile of today is not like the bicycle of even a few years ago, made in large quantities and with duplicate parts readily obtainable from the factory which produced the machine. Some of the smaller factories do not make two automobiles exactly alike, and there would be no end of trouble taking care of the second-hand outfits. A man who paid from \$500 to \$1,000 for a second-hand machine would naturally look to us for repairs."

ENDEAVOR TO SELL FOR CUSTOMER

Another dealer said: "I understand that so-and-so has traded a few machines this year, but we do not propose to start the practice unless it is absolutely forced on us. It is rather difficult to refuse to make an allowance for our own machines of the previous year's pattern, but we shall make no exceptions to our rule. The best we can do is to offer to sell the old machine and allow what we receive for it. We have done this in several instances without charging a commission, but I believe that another year

we shall charge 10 per cent for making the sale. If all the dealers could get together on a basis for handling second-hand machines, everyone would be treated alike and there would be no cause for complaint."

TO REGULATE EQUIPMENT

Another practice which could be regulated to the advantage of all is that of offering bells, lamps and other sundries as an inducement to purchasers. Only in a few isolated cases has this been done thus far, but when hard competition sets in, another year or so from now, there is every probability that there will be cause for complaint on this score. The practice of making small repairs free of charge was another that cost bicycle dealers thousands of dollars, and it was one which was forced on everyone by one dealer making a slightly better inducement than the next.

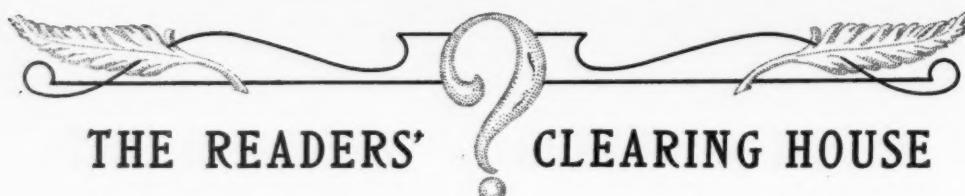
Still another opening for advantageous concerted action in Cleveland is in the matter of a uniform scale of prices for storing cars. Hardly any two of the local dealers have uniform charges for cleaning and storing vehicles left during the day. Some of them do it for nothing, but they are speedily getting over this generosity.

DIAMOND BRANCH PROSPERITY

The Cleveland branch of the Diamond Rubber Co., which was established this year in charge of F. E. Taylor, better known as "Doc" Taylor, has become an important factor in caring for the demands for tires in this section. The branch is located at 323 Huron street, near the corner popularly known as the "new center," and within a short distance of all the leading automobile establishments of the city. The branch sells to everybody who wants to buy, manufacturers, dealers and customers, and in addition to Cleveland, Mr. Taylor attends to the wants of the trade in eastern Ohio, western Pennsylvania and West Virginia. Large varieties of the company's well known line of bicycle and automobile, single tube and clincher tires are carried in stock, and users of the French type of rims are taken care of as well as those of the American standards. An alley at the rear affords a good place for tourists to leave their machines, and at the front, as well as at the rear, there are facilities for automatically pumping tires free of charge. The basement of the store is utilized for a stock room and repair shop, and it is claimed to be equipped with the only steam operated repair outfit between New York and Chicago. At any rate the expert repairmen in charge are prepared to take care of detachable as well as single tube tires of any make.

PARTS TO SPECIAL ORDERS

The factory of Brew & Hatcher, located at 34 Michigan street, is proving an almost indispensable adjunct to nearly every manufacturer of automobiles in Cleveland. The firm started out to manufacture a line of standard parts, but it soon discovered that it could make more money producing parts to suit the wishes of other people, and it is now doing its best to take care of these wants. The shop is well equipped with modern machinery the original number of starters will be run and as the members of the firm have had long experience in the production of automobile work, they are enabled to turn out very satisfactory goods. At the present time they are doing work for the Peerless Motor Car Co., the American Ball Bearing Co., the General Automobile & Mfg. Co., the Cleveland Automobile Co. and other local concerns.



THE READERS' CLEARING HOUSE

PICRIC ACID INQUIRIES

Elmira, Mich.—Editor MOTOR AGE—As there have appeared from time to time articles in MOTOR AGE in regard to the use of picric acid to increase the explosive force of gasoline for automobile use, we would like to know what amount should be used in 10 gallons of gasoline?—M. F. & Co.

Gasoline will only take up or absorb about 5 per cent of its weight of picric acid. About 3 pounds of picric acid will be required for 10 gallons of gasoline. The acid should be put into a 5-gallon can of gasoline in the proper proportion and allowed to stand a day or two, agitating the contents of the can occasionally. The gasoline should be carefully strained through three or four thicknesses of fine linen before being used.

Menominee, Mich.—Editor MOTOR AGE—I have tried to use picric acid in gasoline but cannot make it work. I understand that there is more than one kind of picric acid and if so I would like to know which is the right kind. Must it be chemically pure? I tried to dissolve about 1 pound of commercially pure picric acid in 5 gallons of gasoline, letting it stand for 2 days. I tried it in my boat motor but got no better results than with plain gasoline.—A. D. G.

Commercially pure picric acid should give the desired results in gasoline. MOTOR AGE understands that there are a number of salts of picric acid which are sold for picric acid as they answer the purposes for which they are ordinarily used as well as the acid itself, but which do not have its explosive quality.

QUICK MOTOR STARTING

Evergreen, Colo.—Editor MOTOR AGE—The following little trick which I have found very useful may interest other readers of MOTOR AGE: Whenever, in starting my motor, the carbureter balks and a lot of cranking is seemingly necessary, I saturate a rag with gasoline and hold it over the carbureter air intake. This positively allows the starting of the motor after the first compression stroke. I call the process giving the motor an anaesthetic. If anyone is in doubt as to the cause of the motor not starting easily, this procedure will show whether the difficulty is or is not in the carbureter.—T. B. R.

SUCCESSFUL TWO-CYCLE MOTORS

Buffalo, N. Y.—Editor MOTOR AGE—I notice with pleasure that the two-cycle motor has been discussed in MOTOR AGE from time to time and venture to offer a few suggestions regarding its use on motor-cycles. The two-cycle motor has been used extensively in this country for motor launches with good results and there is at least one automobile firm successfully using this type of motor.

The secret of a successful two-cycle motor lies in the proper proportions and positions of the inlet and exhaust ports with relation to the bore and stroke of the cylinder. These should not be exactly in line, but there should be a sufficient drop between the exhaust and inlet ports to reduce the burned gases to a less pressure than that of the incoming fresh

charge of mixture—which in practice is about 4 to 5 pounds pressure per square inch—before the inlet port is uncovered. As the old or burned charge is never entirely driven out of the cylinder by the new charge, the new charge is consequently more defiled by the old or burned mixture than in the four-cycle type of motor.

The two-cycle motor will generate slightly more heat than the four-cycle motor, but as the compression is less and the charge smaller, the increase in temperature is by no means proportional to the greater number of explosions. In addition to the smoothness of running of the two-cycle motor is the fact that it has no gears or cams to wear out and create noise, and only one valve, the admission or inlet valve on the crank chamber; while in some two-cycle motors no admission valve whatever is used, the up-stroke of the piston uncovering an inlet port connected to the carbureter.

The only disadvantage of the two-cycle motor is that it has not the range of speed or the flexibility of control of the four-cycle motor, but this could be readily overcome for motor cycle use by means of a two-speed gear.—F. G.

PREVENTING SHOCK FROM FRAME

Chicago, Ill.—Editor MOTOR AGE—I recently had an experience which may be of interest to readers of MOTOR AGE. The other evening just after dark I stopped my car to adjust the brakes and upon touching the frame of the car with my hand received quite a severe shock from it. The motor was running at the time. On bringing the bare end of a piece of insulated wire near the frame a stream of sparks flowed from the frame to the end of the wire. The wire had no connection in any way with the car to form a circuit with the induction coil, yet a stream of sparks would flow from the frame to the wire at any point between the seat and the motor, which is located in the front. The batteries and induction coil are located under the seat and one of the wires from the coil is grounded to the frame at this point. The coil has only three terminals and there is no provision for the return of the secondary current except through the grounded wire. Is there any way by which these shocks may be avoided? Would not this sparking be dangerous if there were any gasoline leaks?—E. W.

The shocks may be avoided by removing the ground wire from its present position and extending the wire to a point on the motor as near to the spark plug as possible. It might be quite possible for the sparks to ignite gasoline vapor if there was a considerable leakage of gasoline.

VIBRATOR COIL AND SPARK GAP

Chicago, Ill.—Editor MOTOR AGE—My gasoline automobile motor is fitted with a plain jump spark coil. I recently attached an extra spark gap device in the secondary circuit and it has caused the motor to mis-fire badly since. Should a vibrator coil be used with an extra spark gap? Which is the better for the life

of a battery, a plain jump spark or a vibrator coil?—W. G. R.

If the ignition mechanism is of the De Dion or trembler form of make and break an extra spark gap will not work satisfactorily either with a plain jump spark or vibrator coil. An extra spark gap will require a cam or commutator and a vibrator coil to give good results. A properly made vibrator coil should be as economical in the use of current as a plain jump spark coil. The amount of current used will depend on the length of time that the cam or commutator and contact maker are in contact. One-fifth of a revolution of the motor or one-tenth of the circumference of the cam or commutator is usually sufficient for the length of the contact.

SPARK GAPS AND MAGNETOS

Elgin, Ill.—Editor MOTOR AGE—Is it in any way possible to use an extra spark gap device in connection with a gasoline motor fitted with magneto ignition?—B. M.

It is not possible to use a spark gap device with the type of magneto used in place of an induction coil. If the magneto is of the ordinary form and used instead of a battery, a spark gap may be used with good results.

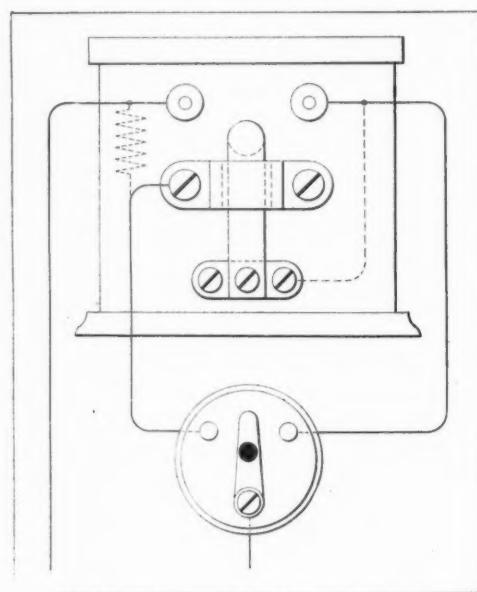
RECUPERATING DRY BATTERIES

Akron, O.—Editor MOTOR AGE—I have several dry batteries which seem to be exhausted and would like to know if they can be recharged from bichromate primary batteries?—H. J.

There is really no satisfactory method of recharging dry batteries. They can, however, be recuperated to some extent by drilling holes in the zinc case, just below the sealing compound, and then allowing the cells to stand in a saturated solution of sal-ammoniac for 5 or 6 hours. Recharging the dry batteries from bichromate primary batteries will recuperate them slightly but not sufficiently to make the job worth while.

CONVERTIBLE INDUCTION COIL

La Salle, Ill.—Editor MOTOR AGE—The ignition mechanism of my gasoline automobile motor is fitted with a cam and spring contact blade of the wiper pattern. The induction coil that came with the car was of the plain jump spark type. With this coil, starting the motor was a very painful job, so I replaced it with a vibrator coil, which serves nicely, but seems



MOTOR AGE

Convertible Induction Coil

to use a great deal more current than did the plain coil. Is there any way in which I can use the coil in connection with a switch on the dash, so that after starting the motor with the vibrator of the coil in operation, I can switch out the vibrator and use the coil as a plain jump spark coil?—G. W.

The illustration shows a method in which the coil can be converted from a vibrator to a plain coil by means of a two-point switch. It will be necessary to ascertain which primary terminal is connected directly through the primary winding to the contact screw bracket, by testing through the terminals and contact parts with a battery. When the right connections are obtained the spring hammer of the contact breaker will simply pull up against the end of the iron core and remain there as long as the battery circuit is closed. Connect this primary terminal with one pole of the battery and the other primary terminal with one of the binding posts of the two-point switch. Then connect the other binding post of the switch with one of the screws of the contact screw bracket. The connection of the primary terminals to the primary winding and contact parts are plainly indicated in the illustration by the dotted lines. On moving the switch blade to the right the electrical circuit is completed through the contact breaker and the primary winding of the coil. If the switch is moved to the left the circuit will be through the primary winding of the coil alone.

COPPER CYLINDER HEAD PACKING

Jefferson City, Mo.—Editor MOTOR AGE—What is the best packing to use between the cylinder head and cylinder? I am continually having trouble on account of the asbestos packing blowing out.—B. H.

Soft sheet copper about 1-16 of an inch thick will make a good packing for the purpose. Grooves of V shape should be turned in both the cylinder head and top of the cylinder, into which the copper gasket is forced when the nuts are tightened.

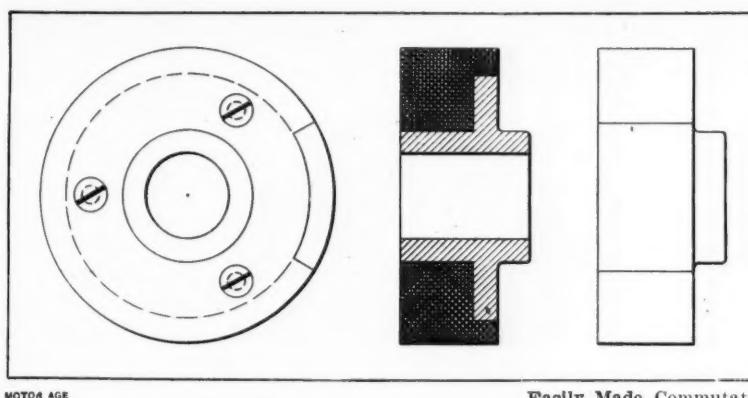
AIR-COOLED, TWO-CYCLE MOTOR

Kenosha, Wis.—Editor MOTOR AGE—Will you inform me as to the correct diameter and weight for the rim of the fly wheel of a two-cycle motor of 3½ by 3½-inch bore and stroke. Could such a motor be properly air-cooled by the use of a fan?—W. M. H.

Unless the desired speed of the motor in revolutions per minute and the compression in pounds per square inch, or the clearance, are known, it would be impossible to give the correct diameter and weight for the rim of the fly wheel. Such a motor with well designed cooling ribs or flanges on the cylinder may be air-cooled, even without the additional cooling effect of a fan.

DISPOSITION OF COMPRESSION SPACE

Green Bay, Wis.—Editor MOTOR AGE—I have constructed a four-cycle motor in which the combustion or compression space is almost entirely in the valve chamber, the piston having only ½ of an inch clearance from the end of the cylinder. The motor is of 4½-inch bore and 6-inch stroke and seems to run all right, but does not have much power. The compres-



Easily Made Commutator

sion is 60 pounds gauge pressure. Can you suggest a reason for the motor not developing more power?—J. W.

The combustion chamber is not properly constructed. In a well designed gasoline motor the bulk of the combustion or compression space should be in the cylinder proper and as little as possible in the valve chamber.

FLY WHEEL SIZE AND WEIGHT

Erie, Pa.—Editor MOTOR AGE—What should be the correct diameter and weight of the rim of the fly wheel for a motor of 4½-inch bore and stroke and a speed of 1,200 revolutions per minute?—B. T.

The diameter of the rim of the fly wheel should be 14 inches and the weight about 70 pounds.

TRANSMISSION BY BELT

Baltimore, Md.—Editor MOTOR AGE—I am constructing a gasoline automobile with belt drive to the speed transmission gear, which is located over the rear axle. The belt will run on two 12-inch pulleys, one of which is on the motor shaft and has a speed of 600 revolutions per minute. What should be the width of the belt to transmit 5 horsepower at the above speed?—W. S.

A 3-inch single ply or a 2-inch double ply belt will transmit 5 horsepower at 600 revolution per minute.

THE SMALLEST CHANNEL SECTION

Los Angeles, Cal.—Editor MOTOR AGE—What is the smallest size of channel section used for structural purposes? Is there any channel made less than 3 inches in depth? I wish to use a small light channel section for the frame of an automobile running gear.—J. K.

There is no channel section made of less depth than 3 inches. Grooved steel similar in shape to a channel section is made in sizes from 2 inches to ½ of an inch in depth. It serves the same purpose, the chief difference being that the flanges are narrower.

CONDENSATION IN MUFFLER

Iowa City, Ia.—Editor MOTOR AGE—I have recently noticed moisture oozing from the seams of the muffler on my car, and I can not account for it. I saturated a piece of paper with the moisture and applied a match to see if it was gasoline, but it would not burn. Should not a muffler be perfectly dry? What is the advantage and object of having the crank case of a gasoline motor air-tight? It seems to me that there would be considerable back pressure on the piston head during the intake stroke, which would lessen the power of the motor. How many cells of dry batteries, 2½ by 6 inches, should be used to

operate a 4½-horsepower, single-cylinder motor with a coil of standard make, and how long a spark should the coil give when the wire is detached from the spark plug? Will you publish a drawing of a commutator? I would like to put one on my motor in place of the spring trembler, which does not work satisfactorily. My gasoline motor, which is of 4½-inch bore, and 5½-inch stroke, is rated by its makers as 4½ horsepower at 1,000 revolutions, while from the table published recently in MOTOR AGE it should be over 7 horsepower. Is this correct? Makers very seldom under-rate the power of their motors.—E. D. C.

The moisture oozing from the seams of the muffler is nothing else than water, formed by the condensation of the exhaust gases in the muffler. More or less lubricating oil and water will accumulate in any muffler, unless there is some provision made to drain it. The principal reason for having the crank case of a gasoline motor air-tight, is to ensure against loss of lubricating oil when the splash system is used. The back pressure due to the air pressure in the crank case causes but a trifling loss, as most of the energy expended in compressing the air in the crank is given back again during the compression and exhaust strokes of the piston, in a similar manner to the compression and recoil of a spring. Six cells of dry battery are necessary to give good results. The spark given between the wire and the ground on the motor should be about ½ of an inch long. A drawing of a commutator is presented. It is, however, necessary to use a vibrator coil with a commutator, as the make and break is not sufficiently quick to operate a plain jump spark coil. The body of the commutator is of phosphor bronze and the insulation of vulcanized fiber or hard rubber. The fiber or hard rubber disk is counterbored to fit over the body of the commutator and notched to receive the contact segment. The insulation is attached to the body by 3 flat head machine screws.

The table of horsepower published in MOTOR AGE is calculated, not brake horsepower. It is not possible to give the actual or brake horsepower in tabular form, as the degree of compression, size of valves and design of combustion and valve chambers play an important part in the actual power given by a gasoline motor. MOTOR AGE knows of one motor of 4½-inch bore and stroke, which gives 5.7 brake horsepower at 840 revolutions and 6.1 brake horsepower at 960 revolutions per minute.

REMEDYING SCRATCHED CYLINDERS

Muskegon, Mich.—Editor MOTOR AGE—I read some time ago in MOTOR AGE how someone had fixed a scratched cylinder by putting something in the scratches to fill them up. There are a few scratches in the cylinder of my gasoline motor, and the compression is consequently very poor. How can the cylinder be fixed so as to avoid reboring it?—C. J. D.

The cylinder may be temporarily fixed by taking it to a first-class tinsmith and having the scratches filled with silver solder. The soldered places must be then carefully scraped flush with the bore of the cylinder. The best way is to have the cylinder rebored and the piston rings re-turned.

IN THE FIELD OF AUTOMOBILE DEVELOPMENT

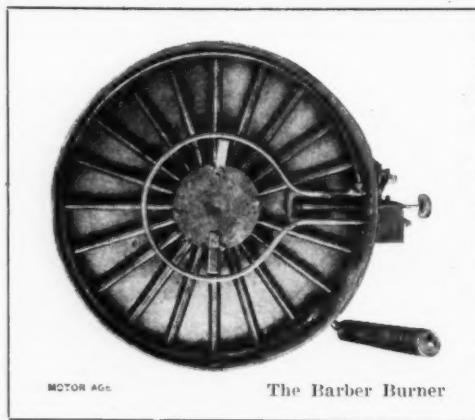
THE BARBER KEROSENE BURNER

Although its formal introduction to the trade was made some time ago, the Barber kerosene burner for steam vehicle boilers has lately drawn especial attention to itself on account of the record performances of several new racing cars at Boston which were equipped with this burner. The generation of steam fast enough to counteract the rapid use of it in racing was so eminently well accomplished by the Barber burner in these trials that its practicability even to the extent of producing the intense heat often presumed to be a quality characteristic only of the regular gasoline burner cannot be questioned.

In speaking of the general construction of its burner the Barber Mfg. Co., of Boston, Mass., says that the result of a long line of experiments was the conclusion that it would be entirely impractical to attempt to raise the kerosene oil in the gas creating coil from its normal temperature to a degree at which it would be sufficiently rarified to produce a blue flame. This conclusion is primarily based upon the assumption that there is in kerosene a substance which becomes a permanent solid when the oil is heated to a degree sufficient to cause the generation of gas, and which, if allowed to remain in the heating or rarifying coil for a considerable time, will carbonize, thereby obstruct the flow of the oil and cause the spraying nozzle to become clogged. Kerosene must be subjected to a high degree of heat before it will be converted into gas that may be burned without smoke or odor.

In the Barber burner there is an auxiliary heater in the form of a copper tubular coil within a steam chamber. This is attached to the side of the burner and boiler and subjects the oil fed through it to a boiler pressure having the effect of raising its temperature to from 300 to 350 degrees Fahrenheit before it enters the coil within which it is converted into gas. Thus the work that must be accomplished in the latter coil is reduced materially—substantially to that required in the corresponding coil of a gasoline burner.

The rarifying, or, as the Barber company calls it, the gasifying, coil is supplied with further provision against accumulation and carbonization of deposit in the form of a wire rope, through the hot strands of which the heated oil is caused to percolate within the chamber until it assumes the form of superheated gas. The removal of this wire cable is easy, and correspondingly it may be cleared of any deposit readily and without inconvenience. To protect the spray nozzle from clogging a filtering screen is provided for the purpose of stopping and holding any drifting sediment. This screen, like the cable, can at any time be easily removed.



The pilot light is so constructed that the air and gas are well mixed before reaching the point of ignition, thus enabling it to be burned entirely independent of the main burner. It is claimed that this light is sufficiently powerful to maintain a fair steam pressure in the boiler for a considerable time after the shutting off of the main burner, a great convenience when leaving the carriage standing temporarily in the street. The main burner, assembled, is shown in the accompanying illustration. Principal among the several distinct claims made for the burner by the maker are the production of a distinctly blue clear flame and of an extremely hot fire, both of which claims seem to have been borne out in practice.

COLUMBIA 5-TON ELECTRIC TRUCK

The Columbia electric 5-ton freight truck, manufactured by the Electric Vehicle Co., of Hartford, Conn., is unique among commercially practical trucks in that it has four-wheel drive and power steering.

The general lines of the construction of the vehicle follow closely the standard horse truck construction of the well-known "New York gear" pattern. The large fifth wheel at the front permits the front axle and wheels to be swung at right angles to the body, giving a very short turning circle and permitting

the vehicle to be turned around in a space which is practically of its own length. All four wheels are alike and of the standard Sarven type, mounted on large roller bearings.

Four powerful motors are used for driving, one for each wheel. These are suspended directly from the body of the vehicle, transmitting power to the wheels by heavy roller chains. The wheel sprockets are bolted directly to the spokes, a simple but strong construction. Chain adjustment is provided by struts between the axles and the motors, and made to allow for twisting strains.

The front truck is steered by means of an electric motor. A large, broad faced steering sector is carried by the truck. This sector meshes with a large pinion at the lower end of a short, thick vertical shaft, at the upper end of which is a worm gear driven by a worm on a short shaft which can be clutched to the steering motor or not, as desired. This arrangement affords a back lock, holding the wheels securely wherever the motor leaves them. In order to give steadiness of steering, especially when coasting or when little power is required, a solenoid released brake is put on the armature shaft to stop rotation the instant the power is turned off. This simple device is said to make it possible to run the truck as fast as 18 miles per hour and hold to a true course. When the front truck is swung at right angles to the body the power is automatically cut off from the rear wheel motors, preventing the front tires from being shoved sidewise when the vehicle is turned in a short circle. The steering motor is controlled by a short tiller placed immediately above the main controller. It is so adjusted that if it is swung through, say, 15 degrees, the front truck swings through the same angle and then comes to rest. The direction of the tiller is always indicative of the direction of the progress of the vehicle. Means are provided to steer the truck by hand in case of accident to the motor or battery.

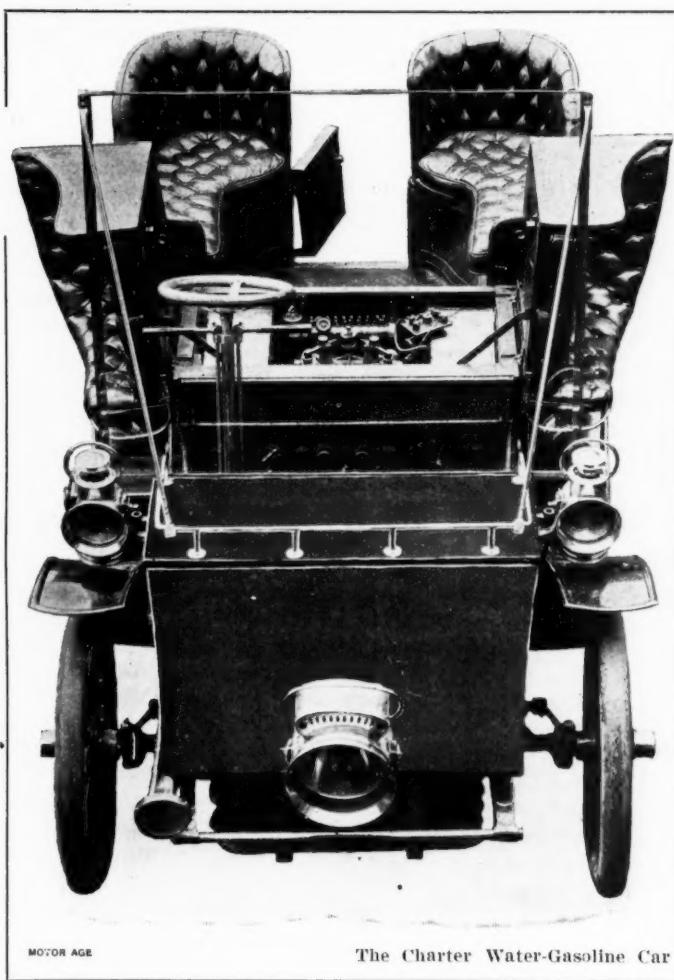
The truck is provided with a powerful winch operated by the steering motor when it has been unclutched from the steering gear and coupled to the clutch gear. This change can be quickly made by the operator.

The battery consists of forty-four Exide cells of 280 ampere-hours' capacity arranged in a tray hung below the body by the well-known Columbia method. A new method of battery suspension from three points has been introduced in this vehicle. With so large a truck, having a platform approximating 16 by 6 feet in size, it is naturally difficult to keep it perfectly flat at all times when it is in service, and by means of this suspension warping and twisting of the battery is eliminated, which would not be the case were it



MOTOR AGE

The Columbia 5-Ton Truck



MOTOR AGE

The Charter Water-Gasoline Car

suspended from four points. The usual Columbia automatic contacts are used on the tray, simplifying the work of loading and unloading batteries. The battery can be removed by one man, although it weighs 3,500 pounds.

The controller is of the standard Columbia vertical pattern, giving four speeds forward, an electric brake and three reverse speeds. The electric brake works on all four wheels and thus tends to prevent skidding.

The maker states that the largest solid tires made are used, and that, as power is applied equally to all four wheels, not only is the driving strain per tire reduced 50 per cent, but the actual weight carried per tire is greatly reduced, inasmuch as only 50 per cent of the total weight of the truck need be supported on each axle, whereas with the two-motor drive from 60 to 70 per cent of the weight is ordinarily carried by the driving axle. The four-wheel drive is further claimed to reduce the liability to skid and to greatly simplify the control of the vehicle under a heavy load.

This truck is especially designed for heavy traffic in crowded centers. The fact that it can be swung entirely around in its own length in from 5 to 20 seconds obviates much of the backing and filling which has proved so tedious to operators of heavy hand-steered trucks, and which involves great wear on tires and mechanism. The matter of accessibility has been carefully attended to and all working parts, including the motor, commutators and bearings, can quickly be reached for cleaning, oiling, adjustment and repairs.

CHARTER'S WATER-GASOLINE MOTOR

There have been many experiments abroad in the line of introducing water into the internal combustion motor, but they have probably not produced the practical results that

have been attained along the same lines by a Chicago experimenter. James A. Charter, mechanical expert of the Fairbanks Morse Co., and one of the oldest gas engine men in the country, has not only succeeded in building a gasoline motor in which water is taken into the combustion chamber together with the hydro-carbon mixture, but has secured sufficiently practicable results to enable the constant and satisfactory use of an automobile propelled by such a motor.

Mr. Charter's system of introducing water into the combustion chamber of the motor is simple enough and depends mainly upon a practical process of atomizing. The gasoline vapor and the atomized water are both taken into the cylinder at the same time upon the suction stroke of the piston. For the gasoline there is an atomizer leading directly to the inlet port, while for the water there is a duplicate atomizer connected to the same port, so that the indrawn column of air suspends both atomized gasoline and water when it finally reaches the combustion chamber. The proportion of water to the amount of gasoline in each charge is about one-half.

The effect of the water contained in the charge is probably two-fold. Being in a finely divided and suspended condition when it reaches the heated cylinder, the water is quickly converted into superheated steam. As soon as the combustion of the regular charge occurs, the steam is further converted,

on account of the intense heat of the ignition of the hydro-carbon mixture, into hydrogen gas, which is naturally burned or consumed together with the hydro-carbon mixture. This assistance of the normal explosive charge by the formation of steam and by the subsequent formation and combustion of the hydrogen gas, tends to increase the length of the effective force of the entire combustion. In other words, the effect is noticeable for a much greater length of the power stroke of the piston, the engine having a softer and more gradual explosion.

It is also assumed that on account of the introduction of water into the combustion chamber, less heat is liberated into the water jacket and that consequently there is less trouble on account of overheating of a motor.

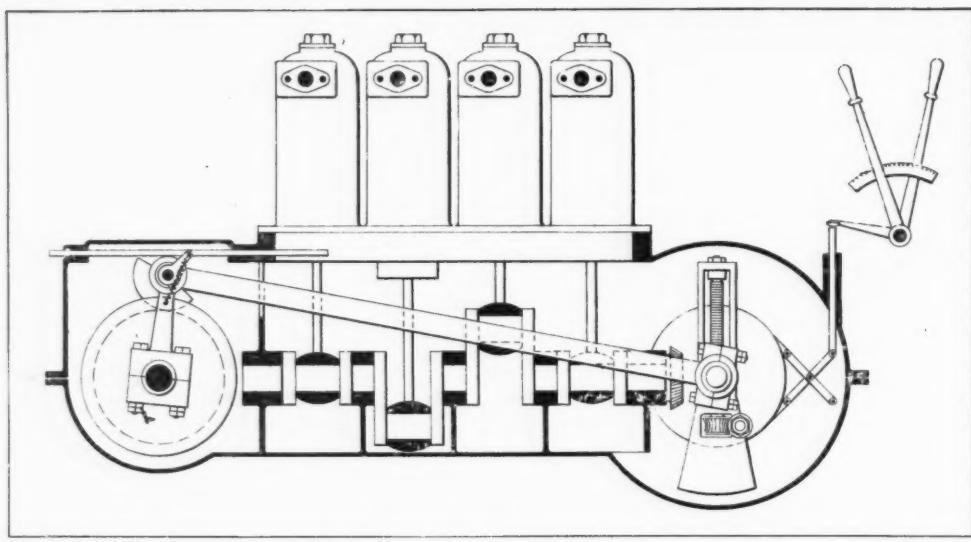
In order to test thoroughly the efficiency of this motor Mr. Charter built it into an automobile several months ago and after a long constant use of the car he says that the motor bears out his theory that the system of water introduction produces both a much greater efficiency and a much more softly and uniformly running engine.

The accompanying illustrations show two views of the Charter car. It is fitted with a two-cylinder vertical motor, which is placed directly under the driver's seat with the shaft crosswise of the car. The transmission gear is under the foot board ahead of the motor and is driven from the motor by a Reynolds "silent chain." The planetary clutches furnish two forward speeds and a reverse. The drive from the transmission gear shaft, which also carries the differential, is by side chains to the rear wheels. The speed gear controlling levers are upon the steering wheel column and their connections are so arranged that it is impossible to engage one clutch without releasing the next. The control of the throttle, which on each cylinder governs the entire supply of the combined mixture of hydro-carbon and atomized water, is by means of a small hand latch on the center of the steering wheel and which also controls the spark lead. The system of control also contains arrangements whereby, when the foot brake



MOTOR AGE

The Charter Water-Gasoline Car



MOTOR AGE

System of Gradual Speed—Fig. 1

is set, the driving clutch is released and the engine is slowed down by throttling and spark retarding to its minimum speed. Obviously, this arrangement prevents racing of the motor when the load is taken off.

The motor being directly under the seat and the latter being divided into two hinged compartments, the motor is readily accessible, especially the atomizing valves, which are placed one for each cylinder directly in front of the respective cylinder heads. The shanks of the needle valves, by which the quantity of flow is permanently regulated, extend through the apron board. Upon the dash board are two sight feeds, one for gasoline and one for water and each indicative of the character of the circulation maintained by the pump that supplies both the gasoline and water atomizers from their respective main supply tanks.

GRADUAL SPEED CHANGING DEVICE

The illustration presents a system of speed changing recently brought out in France and which possesses the obvious advantages of allowing a gradual change of speed from zero to the maximum. This change of speed cannot be quickly made, however, it being impossible to quickly run from the low to the high speed, or vice versa. The gearing comprises two distinct parts. One is the speed changing mechanism proper and the other is the final transmission set whereby the motion is converted and may be reversed. The assembled

apparatus in connection with a four-cylinder motor is shown in Fig. 1, the construction being such that all of the parts are enclosed within the motor crank chamber casing. In Fig. 2 is shown the speed changing and in Fig. 3 the transmission set.

In the speed changing device itself the movement is taken from the motor shaft by a bevel gear and pinion or by miter gears which transmit it to a short cross counter shaft, across the end of which is placed a frame bearing a long screw. This screw engages a movable wrist pin which carries one end of a reciprocating connecting rod. It is obvious that, inasmuch as the screw frame rotates with the shaft, movement of the wrist pin upon the screw toward or away from the center of the shaft determines the throw of the connecting rod, and hence that the change of speed may be regulated by the adjustment of this wrist pin upon the screw.

The wrist pin adjustment is manually secured through a set of two gears, a pinion and two band brakes. One brake is upon an internal gear and the other upon a spur gear, the pinion meshing with both of these gears, which are concentric with the shaft and loosely mounted upon it. The direction of rotation of the intermediate pinion depends upon the braking of one or the other of the gears, while it may also be left in a condition of non-rotation, as it is carried by a stub shaft held by the rotated cross frame. Upon an

extension of the pinion shaft is a worm engaging a worm gear upon the end of the cross screw. Thus rotation of the opinion in either direction causes rotation of the worm and worm gear, and consequently of the screw, in the corresponding direction; the final result being the shifting of the wrist pin upon the screw and the change of its throw or radius of movement.

At the opposite end of the motor is a counter shaft from which motion may be directly transmitted to the driving wheels of the car by chains or any other common method. This counter shaft is given its rotation by a semi-circular cam carried by the connecting rod and engaging a V-grooved sheave, the cam serving substantially the purpose of a ratchet. The inclination of the cam relative to the connecting rod is governed by a spring controlled arm, which may also be shifted by a mechanical device under the manipulation of the operator of the car. Thus by shifting the inclination of the cam, its ratchet effect upon the sheave is reversed, and consequently the direction of rotation of the latter, of the counter shaft and of the vehicle.

Although the transmission effected by the cam and sheave would undoubtedly be quieter and more effective, on account of its softer grip, than the ordinary ratchet, the system possesses the same disadvantage of intermittent application of power, and this feature is probably the weak point of the entire system.

SAFE LOADS FOR SPRING HANGERS

The accompanying table of safe loads for automobile spring hangers of oval, rectangular and round section will be found useful for determining the required cross section of hangers to sustain given loadings, when the length of the hanger—that is, the distance it projects from its point of support—is known. The safe loads given in the table are based upon a fiber stress of 20,000 pounds, which, inasmuch as the maximum breaking stress would be ordinarily 80,000 pounds, gives a factor of safety of four to one. Referring to the illustration, the length of the hanger to be used in connection with the tables is the developed length L —not the horizontal length or the distance of the eye from the point of support of the hanger, as might be supposed.

Safe loads for hangers of 4, 5 and 6 inches in length are given in the tables. For greater lengths of hangers the safe loads will be in-

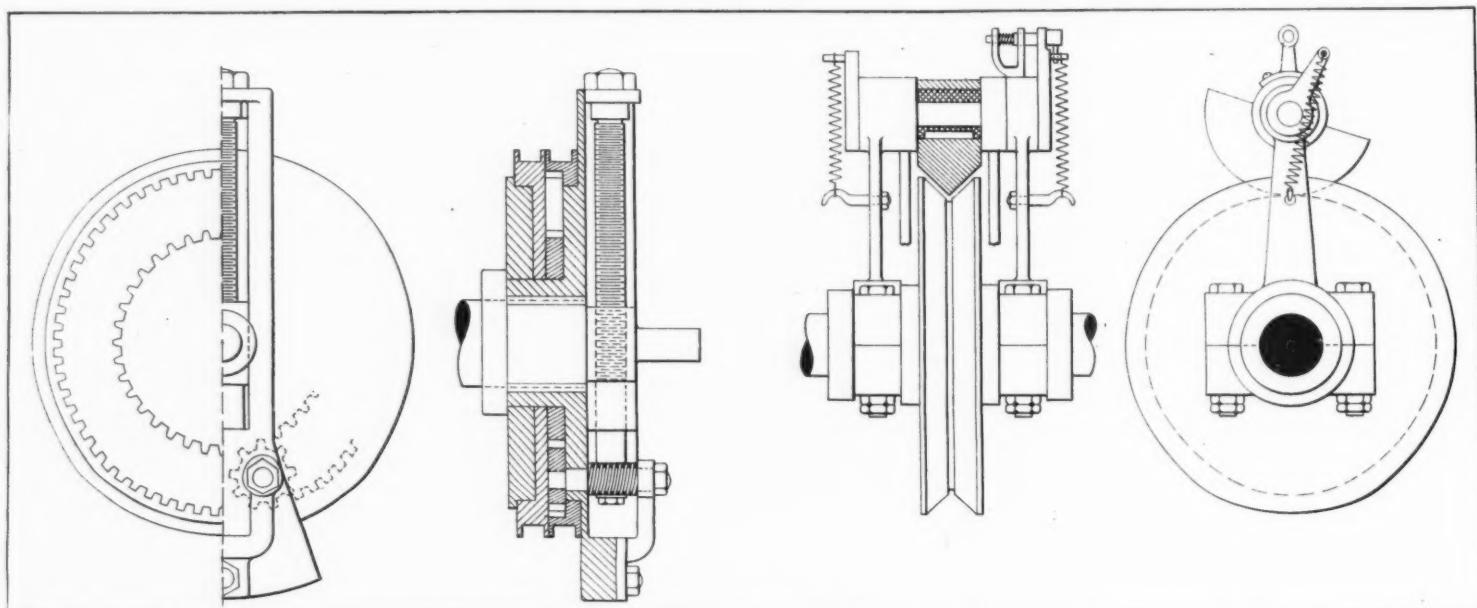
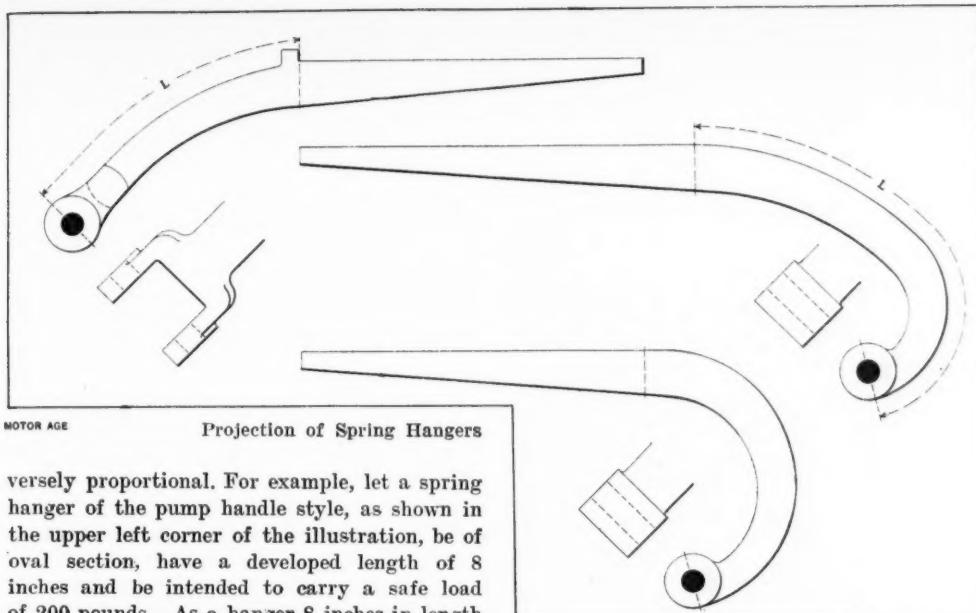


Fig. 2

System of Gradual Speed Change

Fig. 3



versely proportional. For example, let a spring hanger of the pump handle style, as shown in the upper left corner of the illustration, be of oval section, have a developed length of 8 inches and be intended to carry a safe load of 200 pounds. As a hanger 8 inches in length will carry only half the load that will be supported by a hanger 4 inches long, the safe load must be assumed to be twice the required amount. Thus from the table of safe loads for oval sections it is found that a hanger of a section of $\frac{3}{4}$ by $1\frac{1}{2}$ inches, with a length of 4 inches will carry a safe load of 422 pounds. Therefore a hanger 8 inches in length will carry a safe load of 211 pounds, or a trifle more than the required amount.

To obtain the dimensions of a spring hanger of rectangular section for the same safe load as in the previous case, reference to the table for hangers of such section shows that a safe load 417 pounds will be supported by a 4-inch hanger of $\frac{1}{2}$ by $1\frac{1}{2}$ -inch section. Hence an 8-inch hanger of the same section will carry a load of $208\frac{1}{2}$ pounds.

Let it be assumed that there is round section spring hanger $\frac{3}{4}$ of an inch diameter and 6 inches long. The table shows directly that this hanger will carry a safe load of 141 pounds. A running gear with semi-elliptical springs, both front and rear, with spring hangers of $\frac{3}{4}$ -inch round section, will therefore carry a total load of 1,128 pounds. This loading should include both the live and dead loads carried by the springs.

MOTOR WHEEL CHAIRS FOR ST. LOUIS

The Electric Chair Co., of St. Louis, Mo., will probably be granted a concession to operate 2,000 automobile chairs during the exposition next year. The chair is the invention of Semple S. Scott. It is electrically propelled, has a safety guard rail to prevent accidents and will stop instantly this sensitive rail comes into contact with anything.

The chairs will be rented to visitors to the exposition at 50 cents an hour. Each chair will carry two persons, one of whom may operate the machine, or an operator will be furnished if desired. A speed of not more than 3 miles an hour will be maintained, according to the regulations made by the board. The chairs will be allowed in all parts of the grounds.

DECAUVILLE DUST PROOF FRAME

The illustration shows the construction of the pressed motor frame and dust shield which is one of the most striking characteristics of the French Decauville car. This sheet metal motor support is fitted to a pressed steel rectangular running gear frame of standard pattern and is open in the depressed center on a configuration which cor-

responds to the shape of the combined motor and transmission gear casings. These casings, fitting into the opening in the sheet metal support, entirely enclose the motor and mechanism and produce a dust-proof casing for all the working parts, there being none back of the support except the propeller shaft and differential, which, of course, are encased independently by the usual method. This system of construction has been in use all of this season and was recently patented in Europe and America.

PROGRESS OF RENAULT BROTHERS

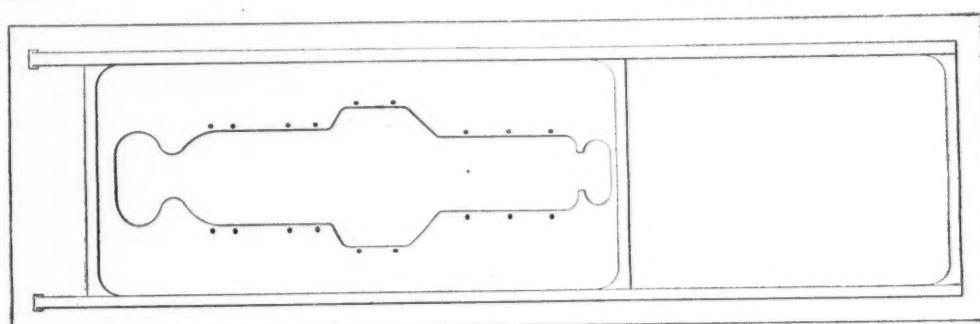
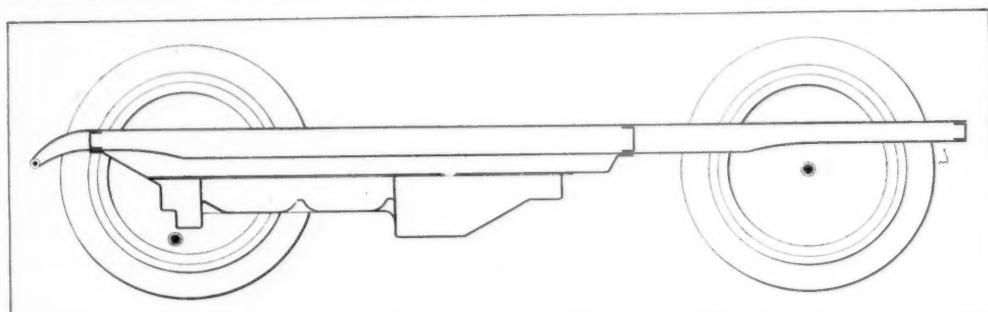
Marcel Renault was only 31 years of age at the time of his unfortunate death. His rise from comparative obscurity to a position of prominence in the automobile world is remarkable. In 1896 he and his brother Louis had a small repair shop at Billancourt which was used for work on a steam yacht they owned. During their spare time they built a quadricycle with a new form of change-speed gear. This was followed by a light automobile, in which was incorporated the change-speed gear and the cardan propeller shaft, which has been largely adopted in light vehicles. Several orders were received from friends for machines similar to the experimental one built for their own use, and the brothers decided in 1898 to build the Billancourt works. Each year since that time they have astonished automobilists by their performances, and have placed their machines in the front rank.

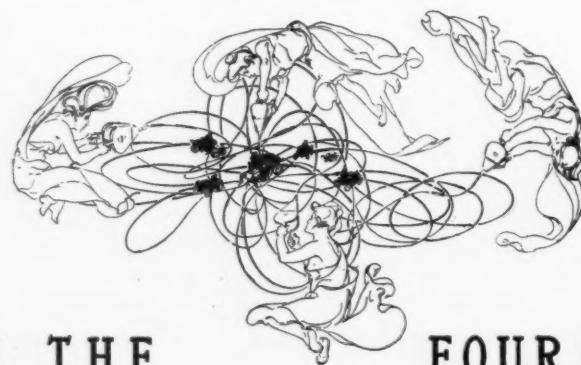
RECENT INCORPORATIONS

Loomis Auto Car Co., of Rutherford, N. Y., capital \$20,000, to manufacture automobiles. Incorporators: Peter T. Davids, Addison Ely, Gilbert T. Loomis, Samuel Squire.

A new company composed, principally, of the stockholders of the Acme White Lead & Color Works, of Detroit, Mich., has been organized under the name of the Peninsular Paint & Varnish Co., the new company to handle the jobbing and store trade of the Peninsular Lead & Color Works, Ltd., while the manufacturing portion of the latter company will be turned over to the Acme company.

The Royal Automobile Club of Spain rejoices in the suggestive initials of R. A. C. E.





FROM THE FOUR WINDS

MELANGE OF TRADE NOTES

Walter F. Flynn and George G. McKay, of Youngstown, O., are both building experimental automobiles in that city.

The G & J Tire Co., of Indianapolis, Ind., issues a little book containing a telegraph code by which tires of any size and automobile sundries may be ordered.

The Garvin Machine Co., of New York, issues a little booklet briefly describing its stock of machine tools and will give more extended information on request.

The A. L. Dyke Automobile Supply Co., of St. Louis, Mo., has removed from 1402 Pine street to 2108 Olive street. The new quarters are larger and on a more prominent street of the city.

As an evidence of the great demand for the quick delivery of automobiles, the Packard Motor Car Co., of Warren, O., reports the shipment of five Model F Packard touring cars last week by Wells Fargo express to San Francisco.

The Cleveland Automobile Co., of Cleveland, O., is sending out strong testimonial letters from buyers of the Cleveland Roadster. The opinions of users are always valuable and convincing argument, and the circular is a good one.

R. D. Burrow, M. D., writes from Burns, Ore., that he is 200 miles from a railroad and everything goes out and in by stage. He thinks a good field is offered there for the automobile and would like the agency for some gasoline car.

The Moyea Automobile Co., of New York, has established a repair and storage department in connection with its manufacturing business at 132 West Forty-ninth street, in the building formerly occupied by the Empire Auto Repair & Storage Co.

The Pope-Robinson Co., of Hyde Park, Mass., calls particular attention in its new catalogue to the fact that the first price on the Robinson touring cars covers everything needed. There are no extras for the buyer to worry over after getting his car. It all comes in a lump.

The new catalogue of the Stevens-Duryea automobiles issued by the J. Stevens Arms & Tool Co., of Chicopee Falls, Mass., is a handsome book, and besides giving good illustrations of the car, has also pictures of the many cups won at different times by the Stevens-Duryea.

The National Battery Co., of Buffalo, N. Y., is now located in its new factory recently built and equipped with special machinery and with current direct from Niagara Falls for electro-chemical processes and power, and claims to

have unequalled facilities for the rapid and economical production of high-grade accumulators.

With becoming modesty the Olds Motor Works calls attention in a new booklet to the great popularity of the Oldsmobile, giving its claims for superiority and illustrating some of the unusual achievements of the machine. According to the pictures, the Oldsmobile is used "from Greenland's icy mountains to India's coral strand."

Wm. E. Metzger, sales manager for the Cadillac Automobile Co., of Detroit, Mich., will be in London, England, at the Hotel Russell, with a complete line of Cadillac automobiles, not later than July 3. Dealers desiring a continental agency should address Mr. Metzger there. A letter written in advance of the day mentioned is advisable.

The American Veneer Co., of Jersey City, N. J., manufactures automobile bodies, with front individual seats and tonneau, of veneer or built-up wood. Over 600 of these have been made for the Winton Motor Carriage Co. this season, and they are now being turned out at the rate of six a day. The facilities have recently been increased to take care of the large amount of this class of work coming in.

In a little booklet, "A Sure Road to Success," the E. R. Thomas Motor Co., of Buffalo, N. Y., tells young men some of the elements of success, gives a few pages of general advice to the young man of grit, energy and determination, and then offers this latter class an opportunity to become agents for the Thomas Auto-Bi. The book

is interesting and is a departure from the ordinary catalogue.

The Northern Mfg. Co., of Detroit, Mich., issues a book of instructions that are full and explicit. The advice given on the title page is that "it should be the pride of every motorist to keep his engine clean," and then the book tells how to do it. Every part of the Northern is described, and all possible roadside failures are met with the proper remedy. An additional card to be used as a daily reminder gives a quick oiling list, telling what to oil instantly, daily, and quarterly. The card closes with the injunction to "never oil any part of the carburetor."

CURRENT MOTORING GOSSIP

Manchester, N. H., has twenty owners of automobiles who will organize a club.

The Ravenswood, Ill., club will supplant its summer coaching parties with automobile runs.

Gasoline is called "petrol" in England and "moto naphtha" in France, but Uncle John Rockefeller gets the money anyway.

The Bluffs City Automobile Club has been incorporated at Elgin, Ill., by L. C. Becklinger, John W. Dame and William F. McCarthy.

The city council of Montgomery, Ala., has fixed the legal rate of speed for automobiles at 10 miles per hour and 4 miles on street crossings.

A 5-acre tract of ground adjoining the Washington Park grand stand has been secured for the convenience of Chicago automobilists going to the derby.

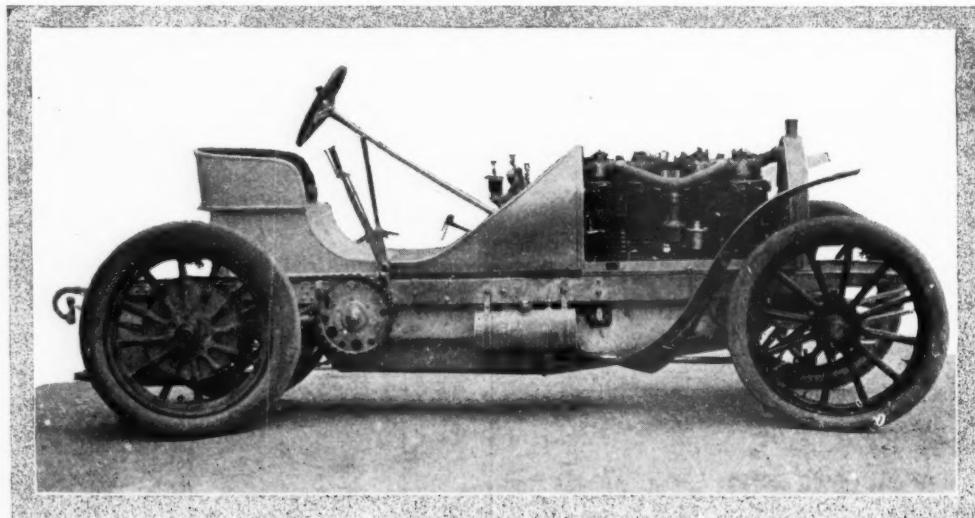
Pittsfield, Ill., carries the banner now for wise legislation. The village council recently passed a law making the speed limit for automobiles 3 miles an hour.

The Moline, Ill., Automobile Club has elected the following officers: President, W. A. Fuller; vice president, Orey Janssen; secretary, F. W. Kelly; treasurer, R. E. Schriker.

The newly elected officers of the Grand Rapids, Mich., Automobile Club are: President, Charles B. Judd; vice-president, Dr. Perry Schurtz; secretary, L. W. Welch; treasurer, N. F. Avery.

An automobile line from Grafton, W. Va., to several nearby towns is being organized by A. H. Phillips, of Grafton. A company with a capital stock of \$10,000 will be organized to push the enterprise.

There seems to be a hesitancy about the motorists of Indianapolis in taking out li-



MOTOR AGE

One of the Six Gordon Bennett Mercedes Which Were Burned

censes. Only sixty-seven have registered with the city comptroller, while there are several hundred cars in the city.

The aldermen of New Orleans, La., are busy these days reading up on the laws enacted in various cities regarding the regulations of automobiling, and as soon as they get something suited to their needs they will mold it into an ordinance.

The Automobile Club of Southern California, with headquarters at Los Angeles, has barred out all dealers and non-owners, and announces that it will control all future automobile races, endurance trials, etc., that may be held in its territory.

The Automobile Club of Wayne County has been formed at Richmond, Ind. The officers elected are: President, Rev. Father J. F. Mattingly; vice-president, R. L. Sackett; secretary, J. A. Spekenhier. The club is preparing an ordinance to submit to the city council, limiting the speed to 8 miles an hour within fire limits and 15 miles an hour outside.

Two special prizes and two first-class certificates for perfect performances were won by Rambler cars in the endurance contest at Denver, Col., on Decoration day. These were the only small, medium weight cars obtaining such awards. In the Minneapolis hill-climbing contest last month, in competition with all makes and weights of cars, the Rambler time was bettered only by the Toledo and Winton cars.

An automobile with two sets of specially constructed wheels, one for loose sand and the other for heavy roads, has been designed by George Winter and Jesse Ellis for use on the Sahara desert. The car will carry forty persons. A party of Americans are now at Cairo, Egypt, and are arranging for a trip across the desert. The vehicle is similar to the kind used by the English to transport troops to the Soudan. The rate of speed through the sand is about 6 miles an hour.

Joseph M. McCormick, the young Chicago newspaper man who was married in Cleveland last week to Miss Ruth Hanna, daughter of Senator Mark Hanna, has the laugh on his numerous college friends, who had promised to give the bridal couple a good send off for their wedding journey. After the wedding breakfast the couple took their carriage and started for their train, followed by a procession of friends, also in carriages. But a few squares from the house the bridal carriage stopped and the bridal couple quickly jumped into a big automobile drawn up at the side of the street. The machine gave a few snorts and quickly left the pursuing carriages as though they were standing still. The car took them at record pace to the neighboring village of Berea, where a special train was in waiting to convey them to Chicago.

BUSINESS LAW POINTS

An unrecorded bill of sale given by a debtor to a creditor, followed by a change of possession of the goods sold, is valid as against other creditors, where the property conveyed is exempt. (70 Pac. Rep. 573).

An action for breach of warranty of the quality of the goods may be maintained by the purchaser without a return or an offer to return the goods, whether the warranty is express or implied. (70 S. W. Rep. 283).

Where the debtor owes the creditor two debts, one secured and one unsecured, and on payment no application is made by the debtor or the creditor, the law will apply it to the unsecured debt. (70 S. W. 409).



MOTOR AGE

A Cadillac Hill Climbing Feat in Detroit
Last Week—The Grade Is 14 Per Cent

Where a purchaser fails to pay for that portion of the goods which has been delivered, the seller may rescind as to the balance of the order and sue at the contract price for what has been delivered. (65 N. E. Rep. 723).

Under contract of sale, where both title and possession remain in the seller until payment of the price, or payment of a judgment rendered for same, on such payment title and possession both pass to the purchaser. (75 N. Y. S. Rep. 504).

Where goods were sold for cash on delivery, the fact that the goods were delivered to a carrier designated by the purchaser, before the price was paid, did not operate to transfer the title to the goods without payment of the price. (70 Pac. Rep. 1080).

A refusal of a traveling salesman, employed at a yearly salary, to return samples belonging to his employer when requested, is sufficient ground for his discharge, and will defeat his recovery of salary for the remaining part of the year. (102 Ill. App. 38).

Though a payment by check is not absolute, unless expressly so agreed, yet where a creditor receives a check, and agrees to credit the amount of same, the burden is on him to show that the check was returned, or that it was not paid at its presentment. (92 N. W. Rep. 445).

A coin issued by authority of law to circulate as money is not deprived of the quality of legality merely by being worn in the process of circulation, so long as it is not appreciably diminished in weight, and retains the appearance of a coin duly issued from the mint. (33 So. Rep. 42).

A manufacturer who so dresses his goods as to enable retail dealers to sell them to customers as those of a competitor earlier in the trade or market is chargeable with unfair competition, and liable for the damages, although he is careful to sell them as his own. (100 Fed. Rep. 557).

Where goods are sold on credit, and while they remain under the control of the seller, though in transit to the buyer, the latter becomes insolvent, the seller may detain the prop-

erty, giving due notice to the buyer, and insist on payment before the property passes out of his control. (92 N. W. 368).

Where partners sell their retail business, with a joint obligation not to enter the same business within a limited area and time, and cease to be partners from the time of sale, it does not require the joint act of both obligors to constitute a breach of the obligation; but its violation by one is a violation by both, for which both and each are liable. (18 App. D. C. 306).

Where a seller extended a term of credit to a buyer in the contract, he was not entitled to refuse to deliver a part of the goods, on the ground that he had received a report of the purchaser's financial standing from a commercial agency which was unfavorable, since nothing short of the actual insolvency of the purchaser would excuse the seller's failure to perform his contract. (92 N. W. Rep. 788).

Where, after a contract for the sale of goods, the buyer becomes insolvent, the contract stands as one for cash on delivery; and where the buyer refuses to pay the price agreed upon and accept the goods, the seller may treat the contract as broken, and may store the goods and sue for the price, or sell the goods and recover for the deficiency, or keep the goods and recover his damages. (92 N. W. Rep. 369).

CHANGE IN MEXICAN PATENT LAW

There is now before the Congress of Mexico a bill providing that trade marks shall be registered and patents for inventions granted without previous investigations respecting their novelty or originality. Measures are also to be taken to reduce the charges on petitions for registrations of trade-marks and applications for patent rights. A special code of penal laws for the prevention of fraudulent uses of trade-marks and violations of patent rights is to be prepared. The law to be enacted shall be in accordance with the convention of Paris, March 20, 1893, that there may be no impediment to Mexico joining the international union for the protection of industrial rights.

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First award in Mass. Auto. Club Hill Climbing Contest, Boston, April 20th, with "Dunlops."

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First award in same contest (in the Gasoline Class) fitted with "Dunlops."

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First award in New York Commercial contest, on May 20th and 21st, with "Dunlops." (Weight of vehicle 3,800 lbs.)

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World's Mile Record, at Readville, Mass., on May 30th, with "Dunlops."

C. H. CURTIS "HERCULES" MOTOR CYCLE:—

First award in New York Motor Cycle Club's Hill Climbing Contest, May 30th, with "Dunlops."

They Can be Relied Upon

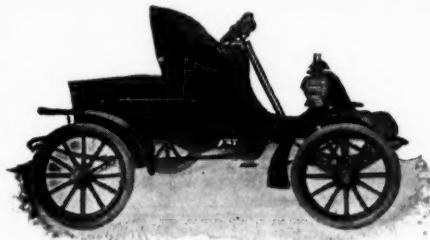
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The ELMORE AUTOMOBILE



is the most simple, practical and reliable car ever put on the market. It is propelled by the famous Elmore motor, whose two cylinders have fewer parts than a single cylinder of any other type.

Either engine will propel carriage should the other be cut out. (A very important fact.)

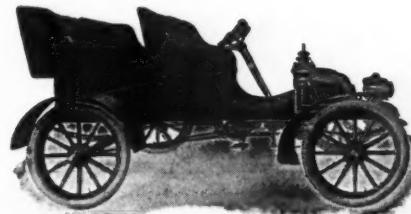
Has dynamo and storage battery. Motor will start and carriage will run on either. (Another important fact.)

You can charge the battery from the dynamo while running the carriage, which is another important fact.

Has had a practical test of over three years' manufacture.

Two first-class certificates in New York-Boston Endurance Run. Have been used in 1000-mile tours without trouble. And still more important facts.

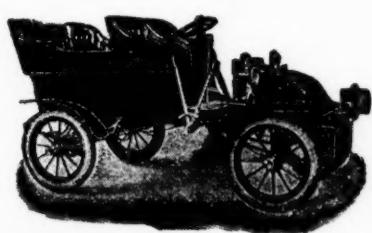
Doctors' and Business Men's favorite car, Model 7, \$800
Tonneau Touring Car, Model 8, \$1400



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Automobiles, Bicycles and Sporting Goods

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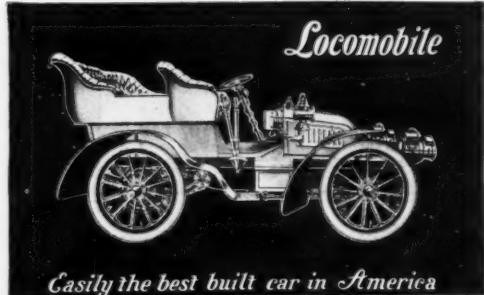
Yours respectfully,
T. E. Taylor.

CLEVELAND AUTOMOBILE COMPANY, 16-20 LAKE STREET,
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J. B. McKEAGUE & CO., 504 Wabash Ave., Chicago Agents.
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"It is the smoothest running machine I have ever seen; easy of operation and perfectly reliable."



From a letter from a customer who had previously owned two foreign cars.



"It is almost absolutely noiseless, climbs any hill I have put at without trouble, is commodious, and I cannot conceive how anything could be better."



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A Customer

SOME APPEALING FEATURES:

Lubrication is automatic, being started or stopped as the spark is switched on or off; governor acts on the mixture and times spark automatically; valves removable and replaceable easier and quicker than on any other gasoline car. The spark plugs won't short circuit and are connected to cables by chains, instead of the usual ever-snapping wires. Throttle on steering wheel permits of speeds from 6 to 40 miles per hour on high-speed gear—this feature alone places our car far in advance of others, and makes the motor as flexible and easily controlled as a steam motor.

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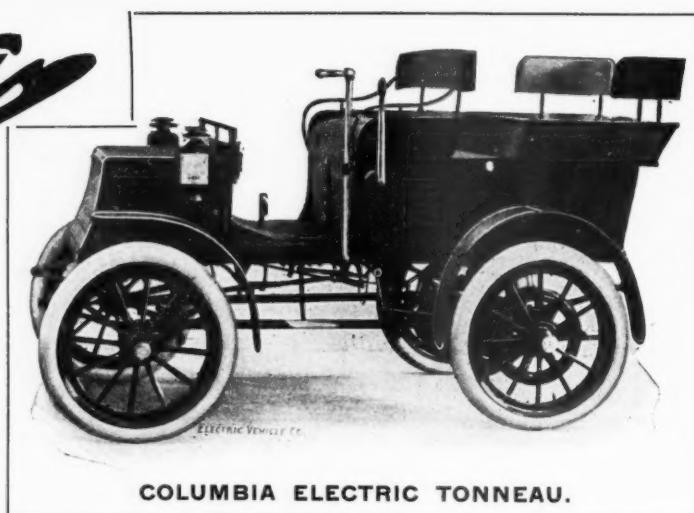
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for 1903 are the result of over four years of manufacture, in which time we have made and sold 5,000 vehicles. Our models are comfortable and convenient; mechanically, they have been brought to a high state of perfection. Prices are low. The **Box Front Runabout** shown is only one of many attractive styles. It holds 14 gallons of fuel, and is powerful and smooth riding.

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New Britain, Conn.—Connecticut Automobile Co., 78 West Main street.

Asbury Park, N. J.—A. A. Taylor.

Philadelphia, Pa.—Banker Bros. Co., 629-633 North Broad street.

Oneida, N. Y.—John Maxwell.

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St. Paul, Minn.—Wm. Rinke, 324 Wabash street.

FOREIGN.

Canada—Wilson & Co., 144 Bank street, Ottawa, Ont.

Mexico City, Mexico—Leon Wolff, Zuleta 10, Apartado 394.

London, England—R. Reynolds, Jackson & Co., Albert Gate Mansions, Knightsbridge.

Lisbon, Portugal—Carlos Carvalho & Co.

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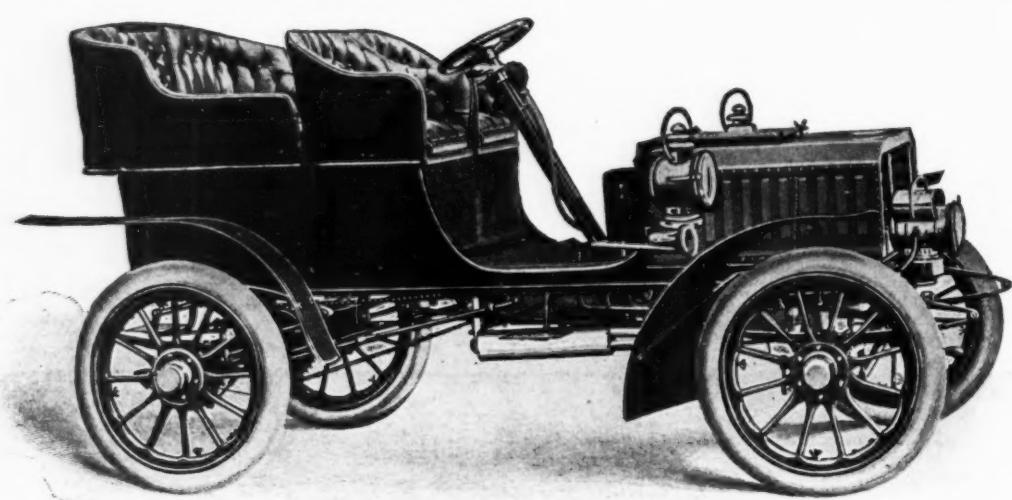
is a superb gasoline car for constant use. It is not a delicate machine, overloaded with mechanical "ginger bread" nor is it a raw, crudely built car. It has the highest degree of mechanical refinement in design and construction, and is simple, strong and powerful. Ask us to tell you why.

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CONRAD GASOLENE 12 H. P. TOURING CAR. PRICE \$1250.00.

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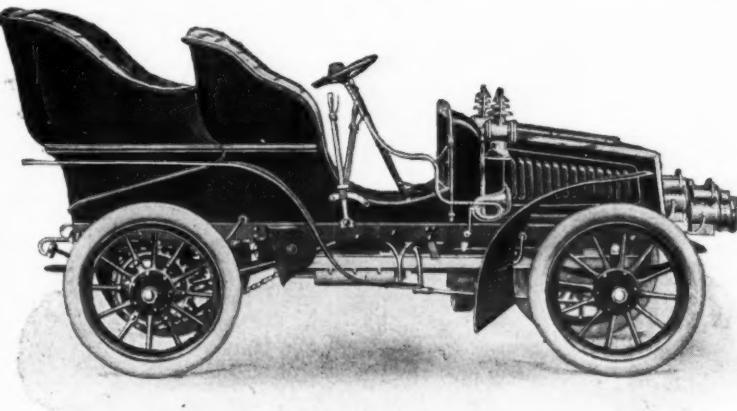
An Automobile Is Only as Strong As its Weakest Part

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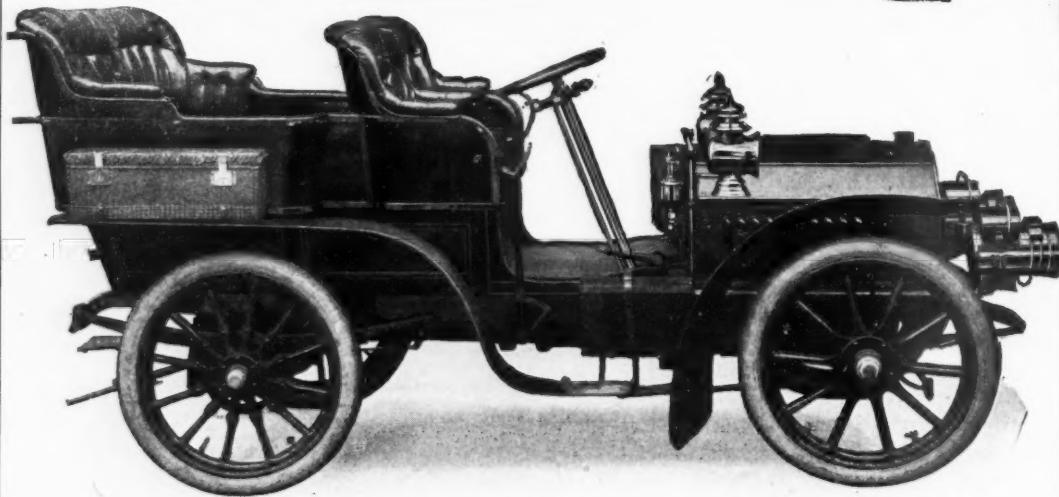
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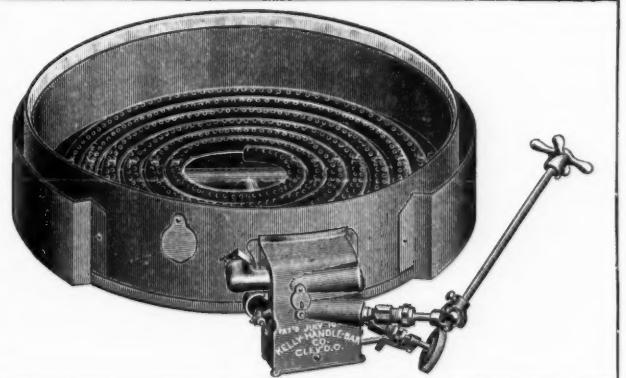
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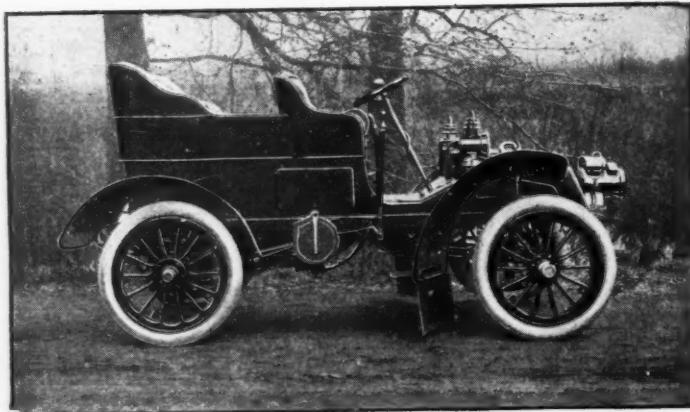
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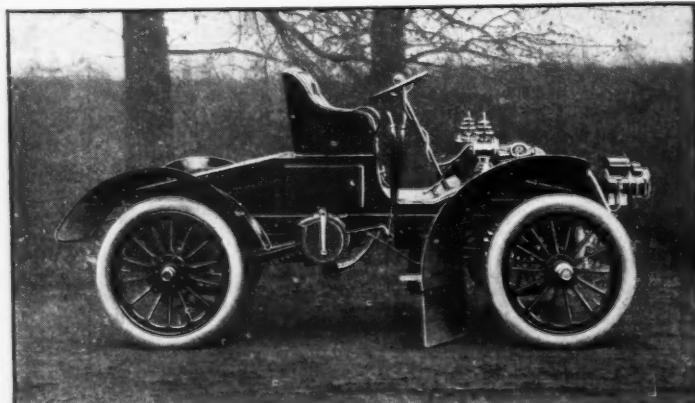
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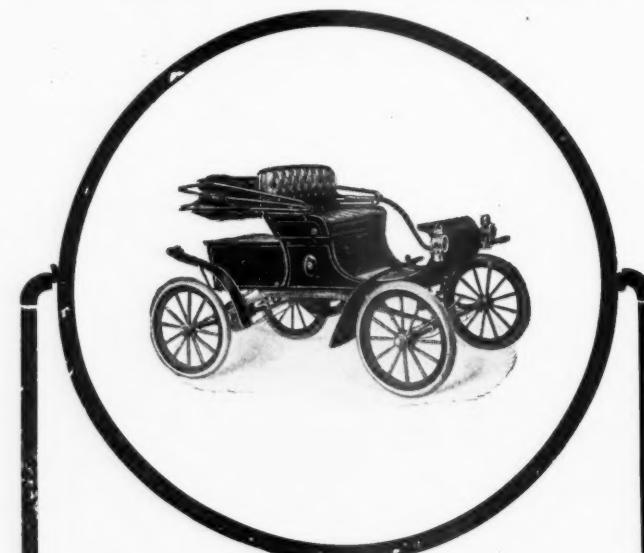
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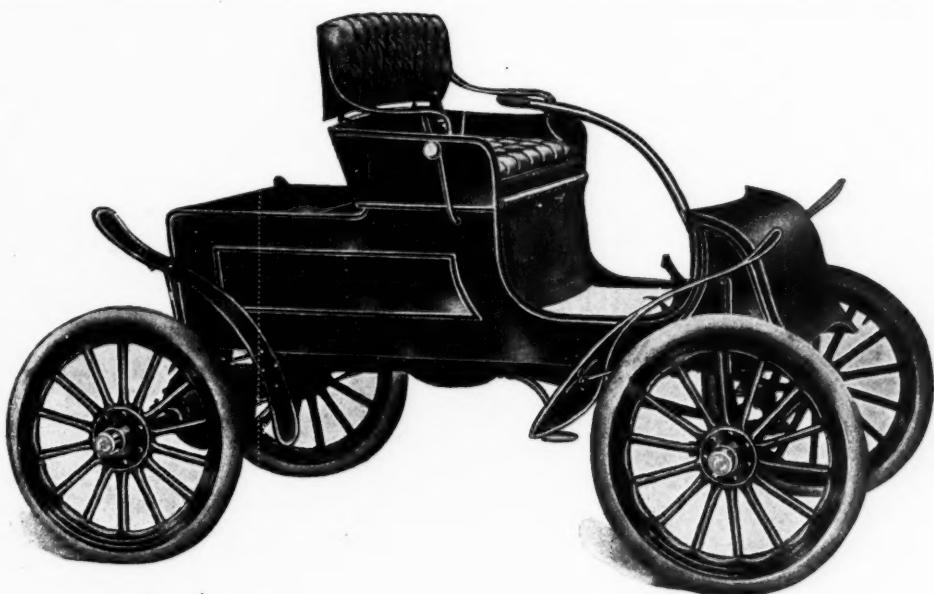
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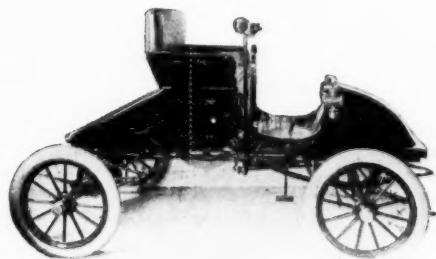
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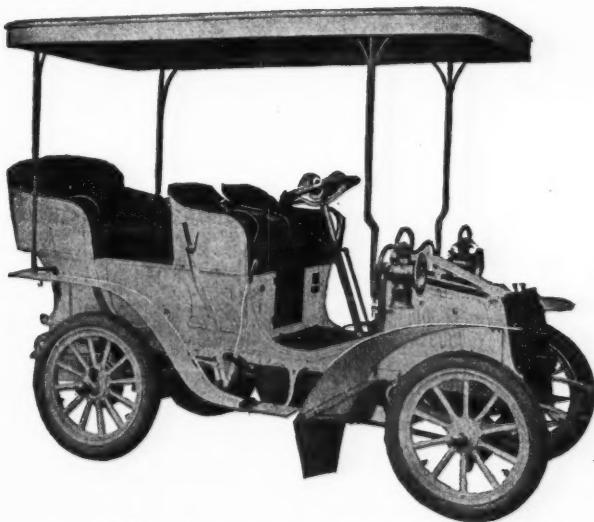
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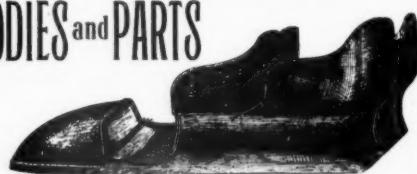
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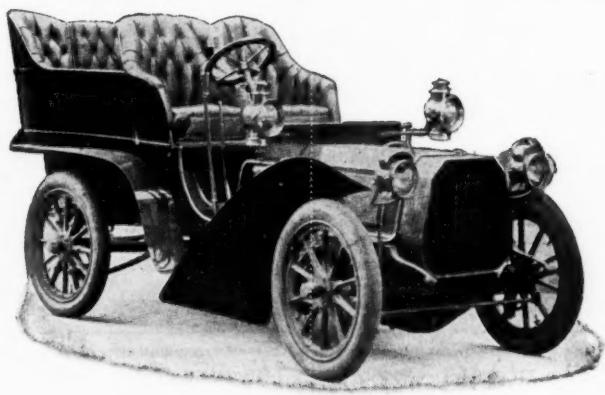
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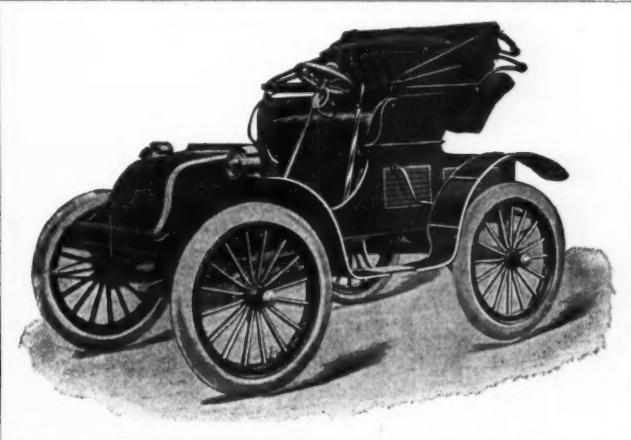
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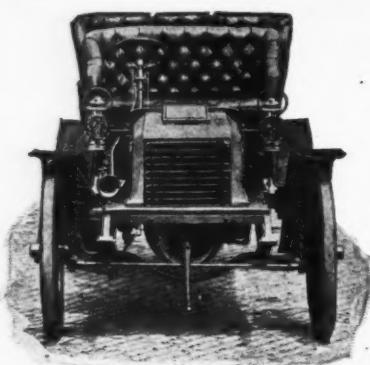
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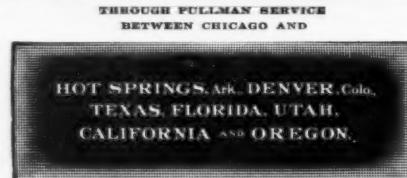
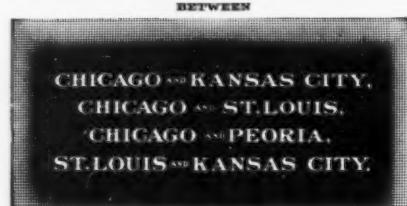
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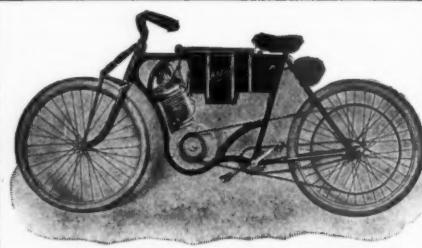
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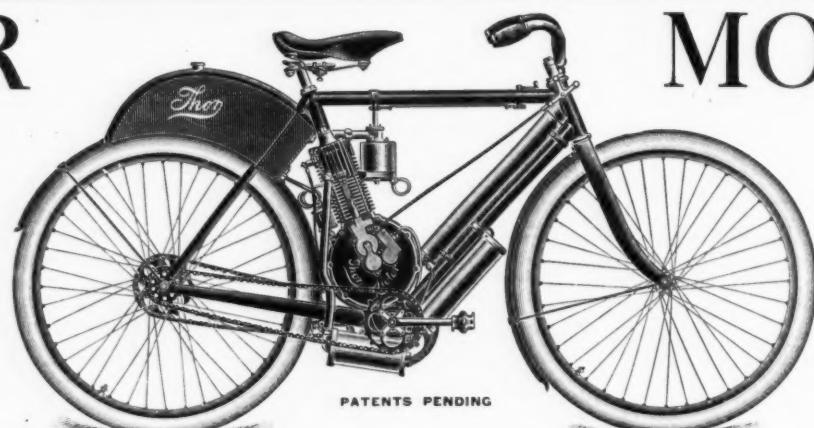
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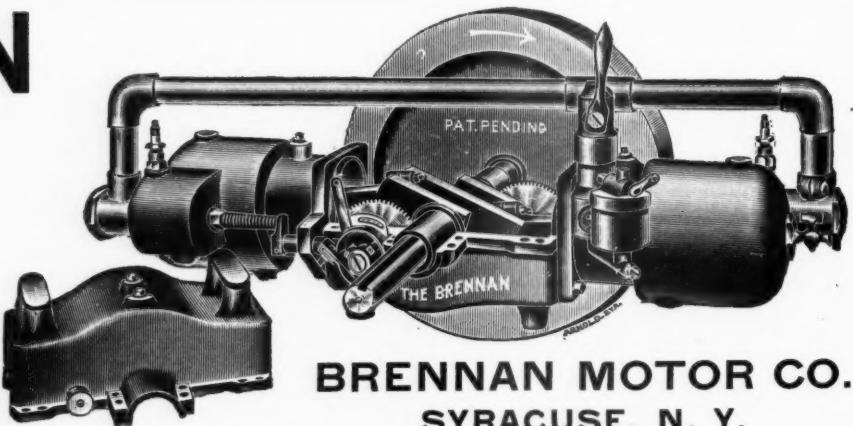
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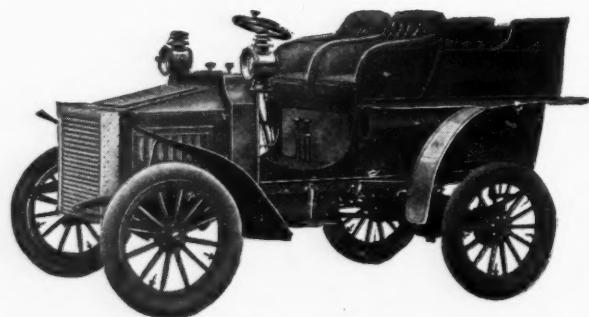
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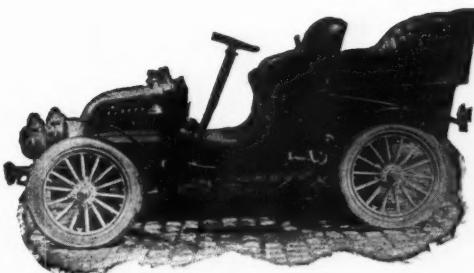
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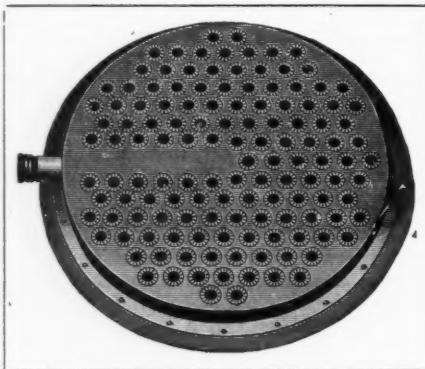
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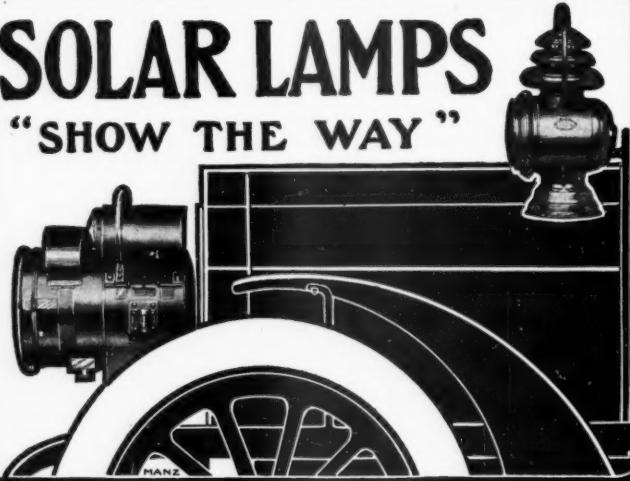
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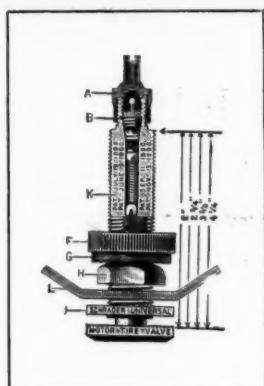
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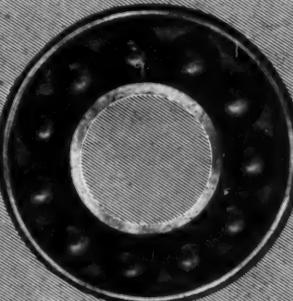
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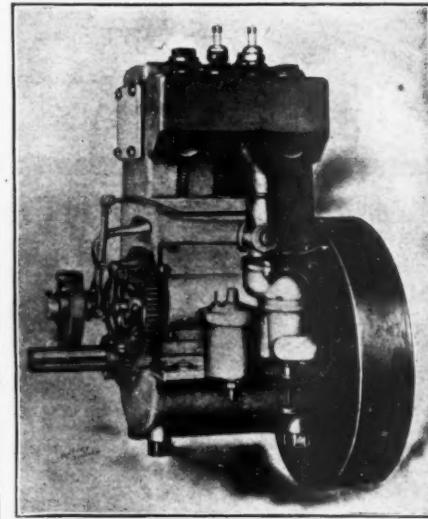


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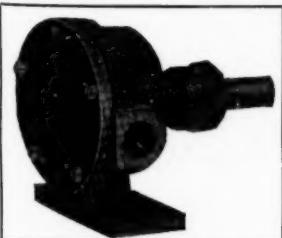
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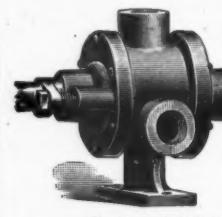
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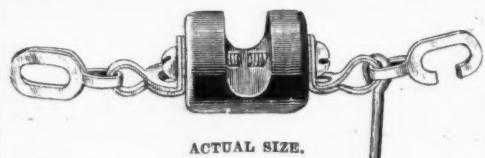
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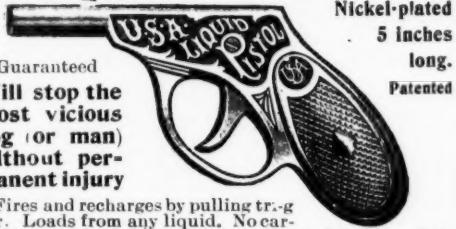
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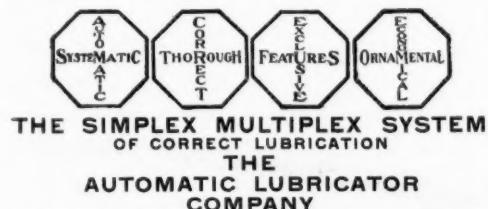
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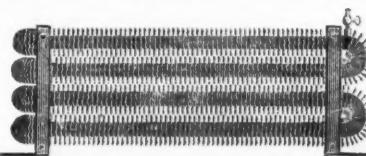
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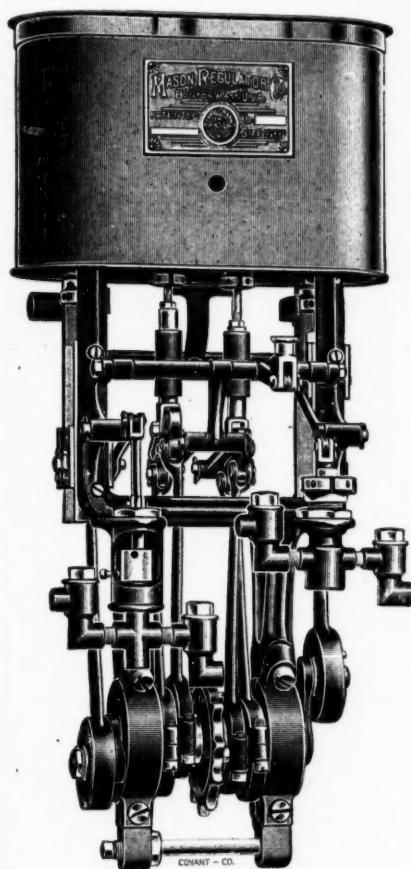
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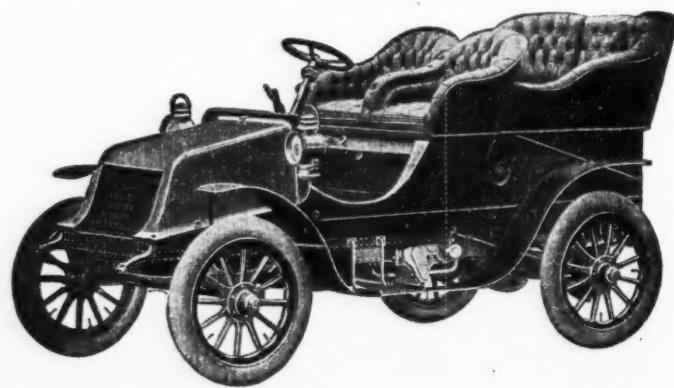
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